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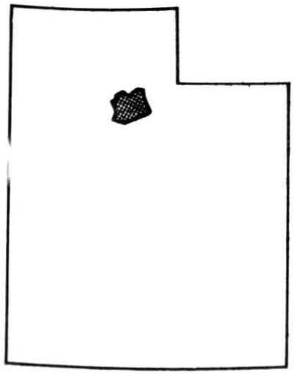
Flood Insurance Study, Salt Lake County, Utah, Unincorporated Areas, Volume 1

Federal Emergency Management Agency

FLOOD INSURANCE STUDY



SALT LAKE COUNTY, UTAH
UNINCORPORATED AREAS

VOLUME 1 OF 2

REVISED: SEPTEMBER 30, 1994

Federal Emergency Management Agency

COMMUNITY NUMBER - 490102

NOTICE TO FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

Part or all of this Flood Insurance Study may be revised and republished at any time. In addition, part of this Flood Insurance Study may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the Flood Insurance Study. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current Flood Insurance Study components.

This publication incorporates revisions to the original Flood Insurance Study. These revisions are presented in Section 9.0.

This preliminary revised Flood Insurance Study contains only profiles added or revised as part of the restudy. All profiles will be included in the final published report.

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PUBLISHED SEPARATELY:

FLOOD INSURANCE STUDY

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the unincorporated areas of Salt Lake County, Utah, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the county that will be used to establish actuarial flood insurance rates and assist the county in its efforts to promote sound flood plain management. Minimum flood plain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were performed by Rollins, Brown and Gunnell, Inc., for the Federal Emergency Management Agency (FEMA), under Contract No. H-4593. This study, which was completed in May 1982, covered all significant flooding sources affecting the unincorporated areas of Salt Lake County, Utah, with the exception of an approximate hydraulic analysis of the Great Salt Lake and redelineation of flood boundaries on Big Cottonwood Creek (downstream of Millrace Lane) performed by Dames & Moore under Contract No. C-0542.

1.3 Coordination

Streams to be designated for detailed and approximate study were identified at a meeting attended by representatives of the study contractor, FEMA, and Salt Lake County and the communities therein in September 1977. Results of the hydrologic and hydraulic analyses were coordinated with representatives of the Salt Lake County Public Works Department, Flood Control and Water Quality Division; the U.S. Army Corps of Engineers (COE); and the incorporated communities of Salt Lake County.

Two intermediate community coordination meetings were held on Feburary 18, 1982, to allow community representatives to review the draft study. In attendance were representatives of FEMA, the study contractor, the COE, Salt Lake County, and the incorporated communities within the county, with the exception of the City of Salt Lake City and the Town of Alta. Several of the communities west of the Jordan River were concerned that only approximate studies had been performed on the ephemeral streams which drain the Oquirrh Mountains. It was explained that this was done because of the limited development on that side of the valley. Concern was expressed by the City of South Salt Lake over the depth and width of the Mill Creek flood plain. These concerns resulted in a hydraulic reanalysis of Mill Creek between Main Street and 700 East Street. The City of Murray pointed out several locations on Big Cottonwood and Little Cottonwood Creeks where COE field data did not reflect recent channel changes. These changes were incorporated into this study.

Two final community coordination meetings for Salt Lake County and the Cities of Draper, Murray, Riverton, Sandy City, South Jordan, and South Salt Lake were held on December 14, 1983. In attendance were representatives of FEMA, the study contractor, the county, and the incorporated communities. Two major concerns raised at the meetings were that the studies did not reflect flows from the 1983 flood and the conversion of the detailed study reaches of the Jordan River between 2100 South Street and the North Jordan Canal Diversion Dam to approximate study. It was agreed that these problems would be addressed during the appeals period along with other minor concerns raised by the individual communities and the county. All requests were considered and, where appropriate, were acted upon in the preparation of this study.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the unincorporated areas of Salt Lake County, Utah. The area of study is shown on the Vicinity Map (Figure 1).

Areas within the county that are excluded from this study are the Cities of Bluffdale, Draper, Midvale, Murray, Riverton, Salt Lake City, Sandy City, South Jordan, South Salt Lake, West Jordan, and West Valley City, and the Town of Alta.

The following streams were studied by detailed methods within the unincorporated areas of the county.

Jordan River	Upstream of a point just downstream of Cudahy Lane

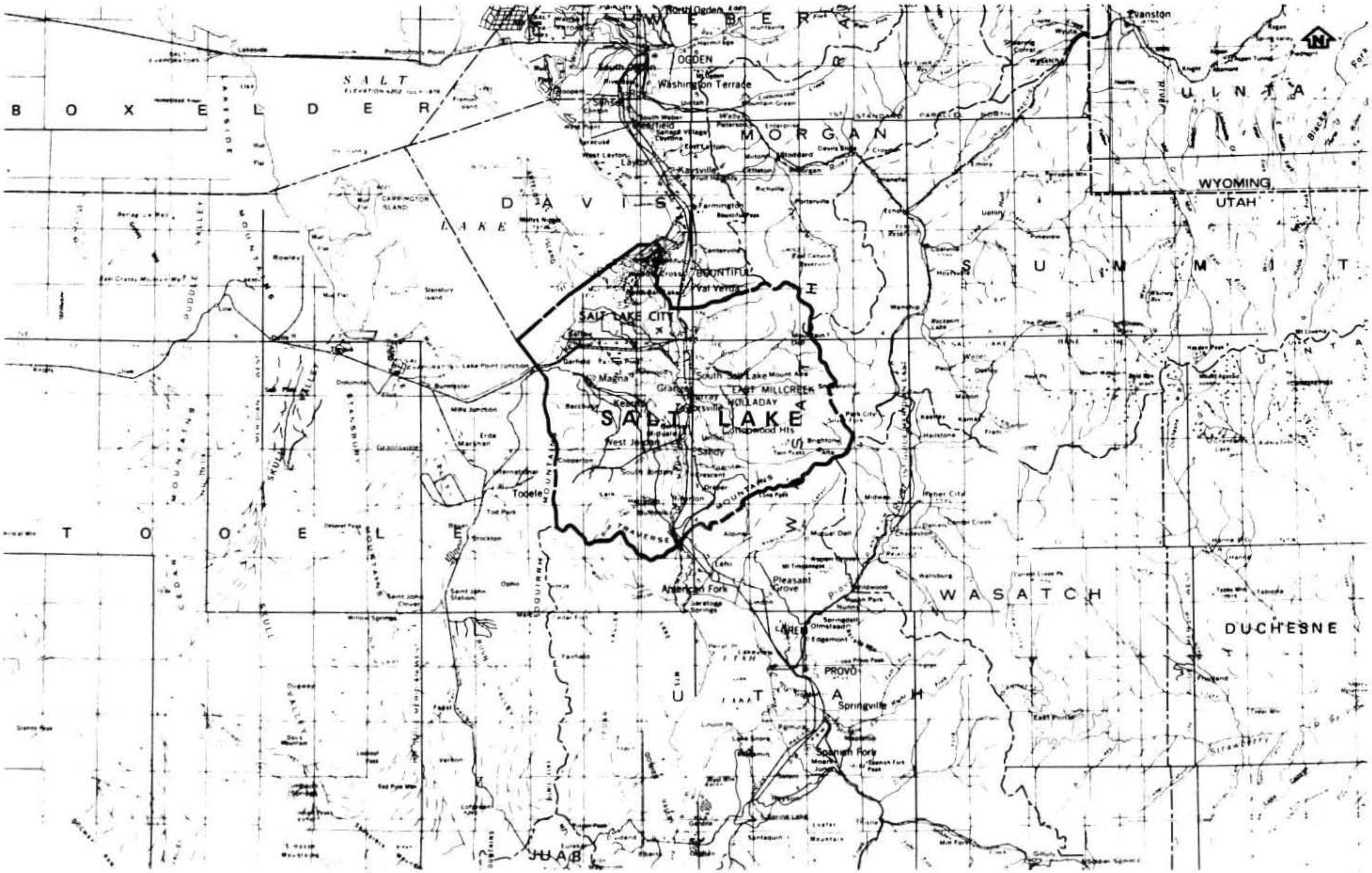

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

APPROXIMATE SCALE

16 0 16 32 48 MILES

VICINITY MAP

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Emigration Creek	From Salt Lake City to the confluence with Burr Fork
Burr Fork	From the confluence with Emigration Creek to a point approximately 2,100 feet upstream
Parleys Creek	From Salt Lake City to downstream of Interstate Highway 215
Mill Creek	From approximately 470 feet downstream of 300 West Street to approximately 3,100 feet upstream of Wasatch Boulevard
Big Cottonwood Creek	From 300 West Street to upstream of Wasatch Boulevard
Little Cottonwood Creek	From Murray to upstream of Wasatch Boulevard
Dry Creek	From South Jordan to upstream of Dimple Dell Road
Willow Creek	From approximately 280 feet to 490 feet upstream of Hidden Valley County Club.

The detailed study reach of the Jordan River within Salt Lake County upstream of 2100 South Street was converted to approximate study. This change resulted from uncertainties in frequency analysis of the hydrologic data and from uncertainties in hydraulic modeling caused by completed and ongoing modifications to the river channel initiated after the completion date of this study. In addition, problems were encountered with elevation data on the orthophoto topographic maps used for the detailed flood boundary delineations; there were also discrepancies between the results of the step-backwater analysis and the detailed flood boundary delineations. Approximate flood boundaries were taken from the Flood Hazard Boundary Map (Reference 1) and were supplemented by flood boundaries taken from COE Flood Plain Information reports (References 2 and 3) where Flood Hazard Boundary Map coverage was not complete. Upstream of the diversion dam, approximate flood boundaries were adopted from the study contractor's detailed 100-year flood boundary delineations.

The hydrologic and hydraulic analyses for Emigration Creek and Burr Fork were performed together as one stream.

The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development or proposed construction through 1987.

Portions of the following streams were studied by approximate methods.

Mountain Dell Creek
Parleys Creek
Mill Creek

Neffs Canyon
Tolcats Canyon
Heughs Canyon
Dry Hollow
Big Cottonwood Creek
Unnamed Canyon (between Ferguson and Deaf Smith Canyons)
Deaf Smith Canyon
Unnamed Canyon (between Deaf Smith Canyon and Little Cottonwood Creek)
Little Cottonwood Creek
Bells Canyon
Middle Fork Dry Creek
South Fork Dry Creek
Big Willow Creek
Coon Canyon Creek
Bingham Creek
Midas Creek
Copper Creek
Butterfield Creek
Rose Creek

Preliminary hydrologic and hydraulic analyses for the tributaries west of the Jordan River, Rose, Butterfield, Copper, Midas, Bingham, and Coons Canyon Creeks, revealed that the approximate 100-year flood boundaries shown on the Flood Hazard Boundary Map (Reference 1) for these streams were accurate. Therefore, the Flood Hazard Boundary Map was chosen as the source of approximate flood boundaries for these streams.

Flooding from the Great Salt Lake was also studied by approximate methods.

Approximate analyses were used to study those areas having a low-development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and Salt Lake County.

2.2 Community Description

Salt Lake County is located in north-central Utah. The counties adjoining Salt Lake County include Davis and Morgan Counties on the north, Summit and Wasatch Counties on the east, Utah County on the south, and Tooele County on the west. The City of North Salt Lake, in Davis County, also borders Salt Lake County to the north. The county is bounded on the east by the Wasatch Mountains, on the west by the Oquirrh Mountains, on the south by the Traverse Mountains, and on the north by the Great Salt Lake. It is divided longitudinally by the Jordan River, which flows north from Utah Lake to the Great Salt Lake a distance of approximately 40 miles. Salt Lake County covers approximately 287 square miles, 66 square miles of which are within the boundaries of Salt Lake City. The remaining 221 square miles consist of undeveloped mountain and valley lands, agricultural areas, and approximately 67 square miles of residential, commercial, and industrial development.

The U.S. Census Bureau lists the 1980 population of Salt Lake County (excluding Salt Lake City) at 456,033. Future projections indicate that the county population could reach 615,000 by 1995 (Reference 4). The majority of the residential development in the history of the Salt Lake Valley has occurred in the north and central bench areas east of the Jordan River. Substantial amounts of commercial and industrial development have taken place along U.S. Highway 89-91 and Interstate Highway 15 which traverse the valley north to south. In recent years, however, development trends have shifted to also include the southern and western portions of the valley.

Residential, commercial, and industrial development has occurred extensively in the flood plains of Mill, Big Cottonwood, and Little Cottonwood Creeks. High value residential construction has taken place along the upper reaches of Mill Creek and on the outwash fan of Neffs Canyon. Substantial amounts of residential construction have also occurred along Emigration Creek above the canyon mouth. Development in the flood plains of Dry and Willow Creeks is sparse. The flood plains of the Jordan River are also largely undeveloped. They do, however, contain some agricultural developments, a few residences, and two sewage treatment facilities.

The principal stream in the Salt Lake Valley is the Jordan River. It originates in Utah Lake at an elevation of approximately 4,489 feet and flows northerly through the center of the valley to terminate in the Great Salt Lake. The east-side streams tributary to the Jordan River originate in the high elevations of the Wasatch Mountains. These streams emerge at the foothill line and flow westerly across terraces formed by the recession of prehistoric Lake Bonneville. Mill, Big Cottonwood, and Little Cottonwood Creeks are perennial tributary streams which drain the center portion of the Wasatch Mountains on the eastside of the valley. Dry and Willow Creeks are intermittent streams which drain the southeastern part of the valley. These east-side streams have fairly steep gradients as they cross the terraces, but become quite flat as they reach the valley floor. Several dry washes and emphemeral streams drain the eastern slopes of the Oquirrh Mountains and join the Jordan River from the west. Drainage areas of the tributaries to the Jordan River range from the high areas of the Wasatch Mountains at an elevation in excess of 11,000 feet, to the valley floor at an elevation 4,250 feet.

Soils typically found in the terraces are granular in nature, while the valley floor is primarily composed of clays or clayey gravels.

Vegetation ranges from conifer, aspen, and oaks in the higher mountain elevations, to scrub oak, sage, and underbrush in the

lower mountain elevations. Residential valley areas are vegetated mainly with lawn grasses, ornamental shrubbery, and shade trees. Undeveloped valley areas are mostly covered by grasses and sagebrush. Aspen and cottonwood trees grow along the stream courses.

The Salt Lake Valley has a temperate, semi-arid climate with four distinguishable seasons. Temperatures generally range from -20°F in winter to 105°F in summer. Precipitation tends to vary directly with elevation, from 16 inches annually on the valley floor to 40 inches annually in the high mountains (Reference 5).

2.3 Principal Flood Problems

Flooding in the Salt Lake Valley generally occurs due to three types of events: snowmelt runoff, cloudburst rainstorms, and general rainstorms. Snowmelt floods usually occur during the months of April, May, and June. Cloudburst rainstorms are high-intensity, short-duration storms which usually occur over a relatively small area. These storms are characterized by high-runoff peaks, but low volumes. They generally occur during summer, from June through October. General rainstorms are caused by low-intensity rainfall occurring over a longer period of time. These storms can have a higher peak than the snowmelt flood and many times can have a higher volume than the cloudburst events. General rainstorms can occur at any time during the year.

The history of Salt Lake County indicates that flooding can occur from any of these types of events. However, the most dramatic and extensive flooding has been due to snowmelt and cloudburst floods.

With the exception of streamflow gages on Emigration Creek, Mill Creek, Big Cottonwood Creek, Little Cottonwood Creek, and the Jordan River, information concerning past flooding in the study area is virtually non-existent. Newspaper descriptions of flooding have dealt primarily with stream reaches within Salt Lake City.

Streamflow gages on the east side tributary streams are generally located at the canyon mouths. These gages, therefore, give an accurate measurement of snowmelt runoff, but do not include any indication of runoff associated with cloudburst rainfall on the urbanized area.

Significant snowmelt flows occurred in the study area in 1909, 1912, 1921, 1949, 1952, 1953, and 1975. A partial list of some of these floods, with their estimated recurrence intervals, is shown in Table 1.

The most notable flood on record in the Salt Lake Valley occurred during the months of April and May 1952. This flood was caused by the rapid melting of an unusually large snowpack on the Wasatch Mountains east of the valley. Approximately 1,200 acres of the

Table 1. Historic Flood Data

Year	Stream	Flow Cubic Feet per Second (cfs)[1]	Estimated Return Interval (Years)
1909	Mill Creek[2]	112	13
	Big Cottonwood Creek[3]	835	67
1912	Mill Creek[2]	121	20
	Big Cottonwood Creek[3]	848	77
	Little Cottonwood Creek[4]	705	13
1921	Mill Creek[2]	104	10
	Big Cottonwood Creek[3]	721	30
	Little Cottonwood Creek[4]	762	18
	Jordan River[5]	1,020	20
1949	Mill Creek[2]	152	50
1952	Emigration Creek[6]	156	100
	Mill Creek[2]	102	10
	Big Cottonwood Creek[3]	503	4
	Little Cottonwood Creek[4]	597	5
	Jordan River[5]	1,410	50
1953	Big Cottonwood Creek[3]	503	4
	Little Cottonwood Creek[4]	736	15

[1] Flow values shown are mean daily. Instantaneous peaks would be somewhat higher

[2] At Canyon Mouth - Salt Lake City stream gage No. 10170000

[3] At Canyon Mouth - Salt Lake City stream gage No. 10168500

[4] At Canyon Mouth - Salt Lake City stream gage No. 10167500

[5] At Jordan Narrows - U.S. Geological Survey stream gage No. 10167000

[6] At Canyon Mouth - Salt Lake City stream gage No. 10172000

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southwest portion of Salt Lake City were inundated. Floodflows from the Jordan River and the study area were diverted around Salt Lake City to the Great Salt Lake through the Surplus Canal.

Flooding problems on Mill Creek occur nearly every year during the spring snowmelt. These problems are created by channel constrictions at Highland Drive, 300 East Street, State Street, and the Union Pacific and Denver and Rio Grande Western Railroad crossings (Reference 8). Flooding on Mill Creek and the other east-side tributaries is aggravated during rainstorms by the inflow from storm sewers which drain the urbanized areas.

2.4 Flood Protection Measures

Efforts to control flooding in Salt Lake County extend back to 1885 when local interests constructed the Surplus Canal from 2100 South Street to the Great Salt Lake. The purpose of this flood-control structure was to divert upstream the Jordan River runoff around Salt Lake City. Enlargement of the canal was completed by the COE in 1960. In order to supply downstream water rights, a gated structure has been constructed at the head of the Surplus Canal. During periods of high runoff, the gates are completely closed and all upstream flow diverted, in order to reserve the downstream channel capacity of the Jordan River for inflow from the Salt Lake City streams. The facility at present has the capacity to divert the entire 100-year runoff from the upstream watershed (Reference 5).

Utah Lake, at the head of the Jordan River, affords a reduction of floodflows along the Jordan River above 2100 South Street. This lake is a natural water body which has been artificially modified so that the water-surface elevation can be controlled through the use of several large radial gates and a pumping station. The ability to raise and lower the lake elevation caused conflicts between the water users and the property owners adjacent to the lake. In order to resolve the conflicts, in 1885, a "compromise level" elevation of 4,489.34 feet was agreed upon. Whenever runoff forecasts indicate that the water surface will exceed the compromise level, the lake is drawn down to permit discharges comparable to natural conditions.

Runoff on Parleys Creek can be regulated somewhat by Mountain Dell Dam, located several miles up Parleys Canyon. This structure was not designed as a flood-control project, but, if capacity is available, can help to reduce downstream flows due to cloudburst storms on the upper watershed.

The Little Dell Lake Project is a COE multi-purpose project planned for construction in the mountains east of Salt Lake City. The project includes diversion and conveyance facilities to divert floodflows from Emigration and Parleys Creeks to the proposed Little Dell Lake. Floodflows from snowmelt runoff could be substantially

reduced by this project. The project has been authorized for construction, but funding has not yet been appropriated. Effects of this flood-control project have not been included in this Flood Insurance Study analysis.

Also under design and planned for construction in the near future is the Jordan River Parkway, a flood control and recreational facility approximately 100 feet to 200 feet wide along either side of the Jordan River, north from Interstate Highway 80 (approximately 2nd South Street) to Interstate Highway 215, north of the city. This flood-control project, when completed, will effectively eliminate overbank flooding through this reach of the river. The Jordan River Parkway has not been included in the Flood Insurance Study analysis for this study.

A number of irrigation diversions along the Jordan River near the southern boundary of Salt Lake County can substantially reduce floodflows. Most outflow from Utah Lake, except during periods of high flow such as the 100- and 500-year floods, can be diverted to these canals.

A detention basin has been constructed on Big Cottonwood Creek near Highland Drive. Discharge from this basin is limited to approximately 650 cfs. Flooding problems are essentially eliminated for a short reach below the facility. Several roadway and railroad fills on Dry Creek and Willow Creek also afford limited detention storage and reduced downstream discharge as conduit capacities are exceeded.

The COE has constructed levees along the Jordan River from Salt Lake City upstream to the mouth of Mill Creek. These levees contain 100-year floodflows with a minimum freeboard of 3 feet. Other levees in the county have little or no effect on floodflows as great as the 100-year flood.

Officials of Salt Lake County have established, in their Public Works Department, a Flood Control and Water Quality Division. It is the responsibility of this office to manage and enforce the county development and flood-control ordinances in the unincorporated areas. The department also works with the incorporated communities within the county, as requested, to manage and review flood-control projects. Salt Lake County also has a county-wide flood-control tax, which enables it to obtain tax funds for use in construction of new flood-control projects and maintenance of existing facilities.

3.0 <u>ENGINEERING METHODS</u>

For the flooding sources studied in detail in the county, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the county at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each flooding source studied in detail affecting the county.

Several stream gages on Salt Lake County streams have been operated since the beginning of the century by Salt Lake City and the U.S. Geological Survey (USGS) (References 6 and 7). A summary of the various gages, their location, length of record, and operating agency is shown in Table 2.

The hydrologic analyses described below for Mill, Big Cottonwood, and Little Cottonwood Creeks were performed by the COE as part of the Jordan River Investigation report (Reference 8). These analyses were performed using the same basic methodologies as those used by the study contractor although values for some parameters, such as rainfall and infiltration rates, differed slightly.

Floodflow frequency analyses for the snowmelt events were performed for Burr Fork, Emigration, Mill, Big Cottonwood, and Little Cottonwood Creeks. The peak flow values were computed based on the Water Resources Council guidelines for determining floodflow frequencies (Reference 9). This method uses existing streamflow data and a log-Pearson Type III distribution in conjunction with a regional skew to predict floodflows. Streamflow records dating back to 1898 were used in the analysis.

Existing streamflow information is not adequate to predict cloudburst runoff values downstream of the canyon mouths where flows are dependent upon inflow from the urban area. In order to obtain flow values in these areas, the HEC-1 computer-runoff model,

Table 2. Stream Gaging Stations

Stream and Location	Gage Number	Operating Agency	Years of Record[1]
Jordan River			
At Jordan Narrows	10167000	USGS	1913-Present
At 9400 South Street	10167200	USGS	1965-1968
At 5800 South Street	10167300	USGS	1965-1968, 1980-1985
At Salt Lake City	10171000	USGS	1942-Present
Surplus Canal			
At Salt Lake City	10170500	USGS	1942-Present
Emigration Creek			
At Canyon Mouth	10172000	Salt Lake City	1900-Present[2]
Mill Creek			
Above Elbow Fork	10169800	USGS	1963-1968
At Canyon Mouth	10170000	Salt Lake City	1898-Present[2]
At 2200 East Street	10170200	USGS	1963-1968
Big Cottonwood Creek			
At Canyon Mouth	10168500	Salt Lake City	1898-Present[2]
At Cottonwood Lane	10168800	USGS	1964-1968, 1979-Present
At 200 West Street	10169500	USGS	1933-1935, 1979-Present
Little Cottonwood Creek			
At Canyon Mouth	10167500	Salt Lake City	1898-Present[2]
At 2050 East Street	10167700	USGS	1963-Present
At 200 West Street	10168000	USGS	1933-1934, 1980-Present

[1] Portions of Salt Lake City's daily records, and monthly summaries of all records, have been published by the USGS. In addition, records are available for many of the diversions from the Jordan River in annual reports by the Utah Lake and Jordan River Commissioner

[2] Records intermittent 1898-1913

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developed at the COE Hydrologic Engineering Center, was used (Reference 10). This model uses a kinematic wave calculation to produce run-off due to rainfall. The model computes and routes flows based on physical characteristics of the basin such as percent imperviousness, infiltration rates, basin area and slope, and storm characteristics such as precipitation depths and rainfall distribution and duration. Rainfall depths were obtained from the Precipitation-Frequency Atlas of the Western United States, Volume VI, prepared by the National Oceanic and Atmospheric Administration (Reference 11). Due to the lack of available rainfall-runoff data, it was not possible to calibrate the computer model.

The HEC-1 analyses were used for all detailed-study streams downstream of canyon mouths. For ged streams, the results of the log-Pearson Type III analyses were combined with the results of the HEC-1 analyses. Snowmelt events, with long, sustained peak discharges, dominated upstream of canyon mouths and cloudburst events, with short, intense peak discharges, dominated downstream of canyon mouths. The ungaged streams, Parleys, Dry, and Willow Creeks were analyzed by HEC-1 analysis only.

Capacities of storm drains and conduits tributary to the Jordan River were used to obtain floodflows on this river downstream of Salt Lake City. Once the capacities of the storm drains and conduits are exceeded, the excess overland flow from the eastern and downtown areas of Salt Lake City will congregate in a large pond created by the Denver and Rio Grande Western Railroad tracks at approximately 600 West Street. Unless the tracks are overtopped, which would occur only during an extreme event (greater than 500 years), all flows must exit through the available capacity of the conduits. Hydrographs for each pipe were computed and added together using kinematic wave routing procedures to produce flood hydrographs and peaks at various locations along the river.

Peak discharge-drainage area relationships for each stream studied in detail are shown in Table 3.

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Water-surface elevations for floods of the selected recurrence intervals for the detailed-study streams were computed using the COE HEC-2 step backwater computer program (Reference 12). Flood profiles for the selected recurrence intervals were drawn showing the computed water-surface elevation.

Table 3. Summary of Discharges

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (Cubic Feet per Second)[2] 10-Year	50-Year	100-Year	500-Year
Jordan River					
Narrows	2,755	1,260	2,400	3,000	4,800
9000 South Street	2,905	1,170	2,230	2,790	4,465
5800 South Street	2,985	1,200	2,280	2,850	4,560
Little Cottonwood Creek Confluence	--[1]	1,585	3,010	3,740	5,925
Big Cottonwood Creek Confluence	--[1]	1,930	3,665	4,535	7,145
Mill Creek Confluence	--[1]	2,000	3,800	4,700	7,400
2100 South Street	3,165[3]	2,000	3,800	4,700	7,400
At Redwood Road	140[4]	1,233	1,233	1,233	1,233
Emigration Creek and Burr Fork					
At Canyon Mouth	19	75	125	150	220
Burr Fork					
At Mouth	--[3]	75	125	150	220
Parleys Creek					
At Canyon Mouth	51	240	330	370	450
Mill Creek					
At Canyon Road	22	150	260	340	1,800
Downstream of 2700 East Street	27	520	620	710	1,900
At Canyon Way	28	790	900	1,030	2,600
Downstream of Highland Drive	31	370	450	540	600
At 700 East Street	33	700	750	800	850

[1]Data not available
[2]Reductions in flow are generally due to detention storage through roadway fills or loss of flow to shallow flooding in overbank areas
[3]Value estimated based on published drainage area for gage at 1700 South Street
[4]Drainage area does not include tributary area upstream of the Surplus Canal diversion

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Table 3. Summary of Discharges (Cont'd)

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (Cubic Feet per Second)[1] 10-Year	50-Year	100-Year	500-Year
Big Cottonwood Creek					
At Wasatch Boulevard	50	603	741	813	1,230
At Arbor Lane	60	764	951	1,044	1,750
At Highland Drive	62	1,021	1,285	1,410	2,563
At Murray-Holladay Road	62	672	722	757	959
At 1300 East Street	63	700	813	891	1,349
At 4500 South Street	66	968	1,272	1,514	3,639
At Union Pacific Railroad	77	961	1,248	1,458	3,294
At 300 West Street	78	944	1,201	1,349	2,684
Little Cottonwood Creek					
At 2000 East Street	36	690	895	1,035	3,890
At 1300 East Street	38	690	915	1,055	3,950
At 5900 South Street	43	740	910	990	2,070
Dry Creek					
At Dimple Dell Road	4	5	30	320	1,630
At 2300 East Street (extended)	5	50	90	420	1,845
At 1300 East Street	11	110	200	510	2,120
At 700 East Street	13	130	240	550	1,750
Willow Creek					
At Kathy Drive	4	10	25	230	1,100
At 11700 South Street	5	70	100	300	1,150

[1]Reductions in flow are generally due to detention storage through roadway fills or loss of flow to shallow flooding in overbank areas

The hydraulic analyses for Mill, Big Cottonwood, and Little Cottonwood Creeks were performed by the COE as part of the Jordan River Investigation report (Reference 8).

The study contractor revised the 100-year hydraulic analysis for Mill Creek between Main Street (in South Salt Lake) and 700 East Street. New cross section data for this reach were field surveyed and extended by using orthophoto topographic maps at a scale of 1:2,400, with contour intervals of 2.5 and 5 feet (Reference 13).

Cross section data used in the backwater analyses for the Jordan River (downstream of Salt Lake City), Emigration Creek, Burr Fork, and Parleys Creek were field surveyed. Cross sections for the above stretch of the Jordan River were supplemented by cross sections field surveyed by Bingham Engineering.

Cross section data for Mill, Big Cottonwood, and Little Cottonwood Creeks were developed by the COE for the Jordan River Investigation report (Reference 8). Cross sections for Mill Creek were taken from topographic maps at a scale of 1:600, with a contour interval of 2 feet (Reference 14). Cross sections for Big Cottonwood and Little Cottonwood Creeks were taken from orthophoto topographic maps at a scale of 1:600, with a contour interval of 2 feet (Reference 15).

Cross section data for Dry and Willow Creeks were developed by the COE for the 1974 Flood Plain Information report (Reference 3). Cross sections were taken from topographic maps at a scale of 1:600, with a contour interval of 4 feet (Reference 16) and additional survey data provided by the county.

Supplemental cross sections to define new bridges or changes in topography were made as a part of this Flood Insurance Study. All bridges, dams, and culverts were field checked to obtain information to describe their structural geometry.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 2).

Channel roughness factors (Manning's "n") used in the hydraulic computations were chosen by engineering judgment and based on field observations of the streams and flood plain areas. Roughness values ranged from 0.025 to 0.200 for main channels and from 0.030 to 0.240 for overbank areas.

Starting water-surface elevations for all streams were determined by normal-depth calculations.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the maps.

The 500-year flooding leaves the main channel of Mill Creek upstream of 2000 East Street and flows to the north of the channel towards Highland Drive. This flow is largely confined to the streets. Constrictions at Highland Drive force 100- and 500-year flooding away from the main channel. These flows move overland south of Mill Creek until they rejoin the main flow at 700 East Street (State Highway 71). The COE determined that the average depth of these overland flows is less than 1 foot on the basis of field reconnaissance, review of topographic information, and engineering judgment (Reference 8).

The 500-year flooding leaves Little Cottonwood Creek at Fort Union Boulevard (7000 South Street) and flows northward, generally paralleling the stream channel. In the vicinity of 900 East Street, this flow is joined by 100-year and additional 500-year overflows from Little Cottonwood Creek. These overland flows move generally northwest until they flow into Big Cottonwood Creek in the vicinity of Shamrock Drive in the City of Murray. On the basis of field inspection, review of topographic data, and engineering judgment, the COE determined these flows to average less than 1 foot in depth (Reference 8).

Floodflows can overtop a small portion of the Jordan River channel downstream of Salt Lake City and pond in the left overbank in the area that will become the Jordan River Parkway. A volumetric analysis was performed, using hand calculations, to determine the depth of this ponding for the 100- and 500-year floods.

Water-surface elevations for the approximate-study streams were computed by normal-depth hand calculations.

An approximate 100-year elevation for the Great Salt Lake was determined from an elevation-frequency analysis of annual peak elevations from 1851 to the present.

The depth and extent of approximate flooding from Neffs Canyon was determined from field reconnaissance, review of topographic data, and engineering judgment.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study produces maps designed to assist communities in developing flood plain management measures.

4.1 Flood Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for flood plain management purposes. The 0.2 percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 100- and 500-year flood plain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using the following topographic and orthophoto topographic maps: for the Jordan River, between Cudahy Lane and the Salt Lake City northern corporate limits; Emigration Creek; Burr Fork; Parleys Creek; Big Cottonwood Creek, downstream from Millrace Lane; and Willow Creek flood boundaries were delineated on topographic maps at a scale of 1:24,000, with contour intervals of 5, 10, 20, and 40 feet (Reference 17).

For Mill and Big Cottonwood Creeks, upstream from Millrace Lane, boundaries were delineated on orthophoto topographic maps at a scale of 1:2,400, with contour intervals of 2.5 and 5 feet (Reference 13). Flood boundaries for Little Cottonwood Creek were delineated downstream of 7000 South Street on orthophoto topographic maps at a scale of 1:2,400, with contour intervals of 2 and 4 feet (Reference 18) and upstream of 7000 South Street on orthophoto topographic maps at a scale of 1:2,400, with contour intervals of 1.5, 2.5, 3.5, and 5 feet (Reference 19). For Dry Creek, flood boundaries were delineated on orthophoto topographic maps at a scale of 1:2,400, with a contour interval of 5 feet (Reference 20).

Flood boundaries for Mill Creek (with the exception of 100-year boundaries between Main Street and 700 East Street); Big Cottonwood Creek, upstream of Millrace Lane; and Little Cottonwood Creek were delineated by the COE for the Jordan River Investigation report (Reference 8).

The 100- and 500-year overland flows from Mill Creek were delineated by the COE on orthophoto topographic maps at a scale of 1:2,400, with contour intervals of 2.5 and 5 feet (Reference 13). Overland flows from Little Cottonwood Creek were delineated by the COE on orthophoto topograhic maps at a scale of 1:1,200, with contour intervals of 2 and 4 feet (Reference 21).

Flood boundaries for the ponding on the left overbank of the Jordan River downstream of Salt Lake City were delineated on orthophoto topographic maps at a scale of 1:2,400, with a contour interval of 2 feet (Reference 22).

Approximate flood boundaries were delineated on topographic maps at a scale of 1:24,000, with contour intervals of 5, 10, 20, and 40 feet (Reference 17).

Approximate 100-year flood plain boundaries in some portions of the study area were taken directly from the Flood Hazard Boundary Map (Reference 1).

4.2 Floodways

Encroachment on flood plains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood plain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent flood plain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

Floodways were computed on all streams studied by detailed methods with the exceptions of Emigration Creek and Burr Fork. It was determined that floodflows corresponding to the 100-year event on these streams would be essentially confined to the channel. Due to this circumstance, the concept of a floodway was deemed to be inappropriate on these streams.

The floodways presented in this study were computed on the basis of equal-conveyance reduction from each side of the flood plain. The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 4).

As shown on the Flood Boundary and Floodway Map (Exhibit 2), the floodway boundaries were computed at cross sections. Between cross sections, the boundaries were interpolated. In cases where the floodway and 100-year flood plain boundaries are either close together or collinear, only the floodway boundary has been shown.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET NGVD)
Little Cottonwood Creek								
A[2]	18,800	55	189	4.8	4,348.7	4,348.7	4,349.3	0.6
B	19,120	16	128	7.1	4,352.7	4,352.7	4,352.7	0.0
C	19,200	22	119	7.7	4,353.3	4,353.3	4,353.3	0.0
D	19,510	47	94	9.9	4,358.1	4,358.1	4,358.1	0.0
E	19,580	74	142	7.0	4,359.2	4,359.2	4,359.2	0.0
F	20,300	102	212	6.1	4,364.5	4,364.5	4,364.7	0.2
G	20,310	80	178	7.3	4,364.6	4,364.6	4,364.6	0.0
H	21,130	57	159	8.2	4,370.7	4,370.7	4,370.9	0.2
I	21,490	48	314	4.2	4,377.0	4,377.0	4,377.9	0.9
J	22,100	106	153	8.5	4,380.5	4,380.5	4,380.7	0.2
K	22,820	51	184	7.1	4,384.4	4,384.4	4,385.4	1.0
L	23,220	51	319	4.1	4,391.3	4,391.3	4,391.9	0.6
M	23,410	43	270	4.8	4,392.3	4,392.3	4,392.9	0.6
N	23,520	23	178	7.3	4,397.7	4,397.7	4,397.7	0.0
O	23,930	171	227	5.7	4,400.3	4,400.3	4,400.8	0.5
P	24,060	151	407	3.2	4,401.6	4,401.6	4,402.6	1.0
Q	25,000	46	180	7.3	4,412.6	4,412.6	4,413.2	0.6
R	25,590	49	179	7.3	4,419.7	4,419.7	4,420.6	0.9
S	25,730	82	315	4.1	4,422.2	4,422.2	4,422.6	0.4
T	26,310	54	257	5.1	4,427.1	4,427.1	4,428.0	0.9
U	26,670	22	194	6.6	4,432.9	4,432.9	4,433.5	0.6
V	27,020	51	189	6.5	4,434.7	4,434.7	4,434.8	0.1
W	27,370	41	136	8.2	4,438.3	4,438.3	4,438.5	0.2
X	27,690	47	186	6.3	4,441.9	4,441.9	4,442.6	0.7
Y	28,170	12	126	8.9	4,451.5	4,451.5	4,451.5	0.0
Z	28,240	62	310	3.6	4,452.8	4,452.8	4,452.8	0.0

[1]Feet Above Mouth
[2]Floodway is Located Entirely Outside Unincorporated Areas of Salt Lake County

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

FLOODWAY DATA

LITTLE COTTONWOOD CREEK

Jo

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE
Jordan River (Upstream of Surplus Canal Diversion)								
A	675	134	1,392	3.4	4,232.3	4,232.3	4,232.3	0.0
B	13,628	90	1,022	4.4	4,235.6	4,235.6	4,236.6	1.0
C	14,063	70	941	4.8	4,235.7	4,235.7	4,236.7	1.0
D	15,333	108	1,078	4.2	4,236.7	4,236.7	4,237.7	1.0
E	15,573	111	1,186	3.8	4,236.8	4,236.8	4,237.7	0.9
F	16,423	90	1,025	4.4	4,237.2	4,237.2	4,238.2	1.0
G	18,063	225	1,443	3.1	4,238.3	4,238.3	4,239.2	0.9
H	19,353	110	1,213	3.7	4,238.7	4,238.7	4,239.7	1.0
I	19,783	126	1,133	4.0	4,239.1	4,239.1	4,240.1	1.0
J	20,219	82	1,067	4.2	4,239.7	4,239.7	4,240.6	0.9
K	20,389	75	803	5.6	4,239.8	4,239.8	4,240.8	1.0
L	21,449	164	1,370	3.3	4,240.9	4,240.9	4,241.9	1.0
M	23,569	72	860	5.3	4,242.1	4,242.1	4,243.1	1.0
N	23,884	185	1,240	3.7	4,242.8	4,242.8	4,243.5	0.7
O	25,079	243	1,611	2.3	4,243.4	4,243.4	4,244.4	1.0
P	25,609	100	993	3.8	4,243.6	4,243.6	4,244.6	1.0
Q	26,599	86	873	4.3	4,244.3	4,244.3	4,245.2	0.9
R	27,230	145	816	4.6	4,245.1	4,245.1	4,246.0	0.9
S	27,830	76	832	4.5	4,245.7	4,245.7	4,246.7	1.0
T	28,475	81	592	6.3	4,247.1	4,247.1	4,247.4	0.3
U	29,035	61	434	8.6	4,247.7	4,247.7	4,248.0	0.3
V	29,595	44	614	6.1	4,249.1	4,249.1	4,249.5	0.4
W	30,042	41	526	7.1	4,249.2	4,249.2	4,249.7	0.5
X	30,752	89	728	3.9	4,250.1	4,250.1	4,250.8	0.7
Y	31,112	142	844	3.4	4,250.1	4,250.1	4,250.8	0.7
Z	32,462	124	714	4.0	4,250.8	4,250.8	4,251.7	0.9

[1]Feet Above Surplus Canal Diversion

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

FLOODWAY DATA

JORDAN RIVER

21

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET NGVD)
Jordan River (Upstream of Surplus Canal Diversion) (Cont'd)								
AA	32,797	54	402	7.1	4,250.9	4,250.9	4,251.7	0.8
AB	33,407	71	578	4.9	4,251.7	4,251.7	4,252.6	0.9
AC	34,447	90	623	4.6	4,252.5	4,252.5	4,253.4	0.9
AD	35,787	85	585	4.9	4,253.7	4,253.7	4,254.3	0.6
AE	36,277	95	550	5.2	4,254.3	4,254.3	4,254.8	0.5
AF	37,057	120	673	4.2	4,255.6	4,255.6	4,255.9	0.3
AG	54,521	53	543	5.1	4,286.7	4,286.7	4,287.0	0.3
AH	54,981	89	781	3.6	4,287.5	4,287.5	4,287.9	0.4
AI	55,481	58	575	4.8	4,287.9	4,287.9	4,288.3	0.4
AJ	56,641	48	516	5.4	4,289.1	4,289.1	4,289.6	0.5
AK	57,641	46	607	4.6	4,290.5	4,290.5	4,291.4	0.9
AL	58,841	76	681	4.1	4,291.9	4,291.9	4,292.9	1.0
AM	59,901	61	559	5.0	4,292.9	4,292.9	4,293.8	0.9
AN	60,931	121	899	3.1	4,293.9	4,293.9	4,294.6	0.7
AO	61,361	86	659	4.2	4,294.2	4,294.2	4,294.9	0.7
AP	61,561	247	706	3.9	4,294.7	4,294.7	4,295.1	0.4
AQ	61,931	63	564	4.9	4,295.0	4,295.0	4,295.6	0.6
AR	62,821	74	549	5.1	4,295.8	4,295.8	4,296.6	0.8
AS	63,441	86	659	4.2	4,296.3	4,296.3	4,297.1	0.8
AT	63,991	89	574	4.9	4,296.8	4,296.8	4,297.5	0.7

[1]Feet Above Surplus Canal Diversion

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

FLOODWAY DATA

JORDAN RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Jordan River								
A	2,120[1]	91/46[2]	510	2.42	4,211.8	4,211.8	4,211.8	0.0
B	4,270[1]	93/47[2]	554	2.22	4,212.3	4,212.3	4,212.3	0.0
C	4,370[1]	77/39[2]	619	1.99	4,212.3	4,212.3	4,212.3	0.0
D	4,500[1]	77/39[2]	619	1.99	4,212.3	4,212.3	4,212.3	0.0
E	4,550[1]	87/44[2]	645	1.91	4,212.3	4,212.3	4,212.3	0.0
F	8,575[1]	73/37[2]	391	3.15	4,213.1	4,213.1	4,213.1	0.0
G	14,050[1]	111/54[2]	545	2.34	4,214.8	4,214.8	4,214.8	0.0
H	14,600[1]	87/43[2]	568	2.25	4,214.9	4,214.9	4,214.9	0.0
I	15,330[1]	80/40[2]	643	1.98	4,215.1	4,215.1	4,215.1	0.0
Parleys Creek								
A	13,910[3]	5	28	13.1	4,592.0	4,592.0	4,592.0	0.0
B	13,960[3]	49	164	2.3	4,595.0	4,595.0	4,595.0	0.0
C	17,640[3]	38	54	6.8	4,675.7	4,675.7	4,675.7	0.0
D	17,740[3]	8	32	11.5	4,680.4	4,680.4	4,680.4	0.0

[1]Feet Above A Point Sixty Feet Downstream of Cudahy Lane of Salt Lake County
[2]Width/Width Within Unincorporated Areas
[3]Feet Above Entrance to Conduit

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

FLOODWAY DATA

JORDAN RIVER-PARLEYS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE
Mill Creek								
A	7,025	17[2]	142	5.6	4,241.9	4,241.9	4,242.8	0.9
B	7,790	8[2]	56	14.2	4,241.9	4,241.9	4,242.1	0.2
C	8,615	12[2]	122	4.9	4,246.6	4,246.6	4,246.8	0.2
D	9,435	44[2]	387	1.4	4,249.5	4,249.5	4,249.8	0.3
E	9,936	13[2]	77	7.2	4,250.0	4,250.0	4,250.3	0.3
F	10,240	14[2]	69	8.0	4,254.5	4,254.5	4,254.5	0.0
G	11,033	24[2]	179	3.5	4,255.3	4,255.3	4,256.2	0.9
H	11,891	24[2]	173	4.0	4,257.5	4,257.5	4,257.5	0.0
I	18,815	66	336	1.6	4,268.4	4,268.4	4,268.8	0.4
J	21,082	60	100	5.4	4,298.4	4,298.4	4,298.4	0.0
K	22,765	64	113	4.8	4,322.1	4,322.1	4,322.6	0.5
L	24,495	8	52	10.4	4,352.5	4,352.5	4,352.9	0.4
M	26,266	82	526	2.6	4,409.2	4,409.2	4,409.2	0.0
N	27,425	45	208	5.0	4,438.7	4,438.7	4,439.1	0.4
O	29,160	5	67	11.7	4,490.8	4,490.8	4,490.8	0.0
P	30,660	4	62	11.4	4,533.1	4,533.1	4,533.1	0.0
Q	33,360	18	75	9.4	4,603.3	4,603.3	4,603.3	0.0
R	36,420	21	73	4.8	4,697.9	4,697.9	4,697.9	0.0
S	39,480	41	72	4.9	4,796.4	4,796.4	4,796.4	0.0
T	42,070	7	123	2.8	4,878.3	4,878.3	4,879.3	1.0
U	43,790	8	75	4.5	4,943.8	4,943.8	4,943.8	0.0

[1]Feet Above Mouth [2]Floodway Is Located Entirely Outside Unincorporated Areas of Salt Lake County

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

FLOODWAY DATA

MILL CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY	INCREASE
Big Cottonwood Creek								
A	4,160	32	255	5.6	4,247.5	4,247.5	4,248.1	0.6
B	4,523	50/30[2]	406	3.5	4,248.4	4,248.4	4,248.9	0.5
C	4,693	17	180	8.0	4,249.0	4,249.0	4,249.6	0.6
D	4,753	81	458	3.1	4,251.9	4,251.9	4,252.2	0.3
E	5,080	95	737	1.9	4,252.1	4,252.1	4,252.5	0.4
F	5,260	128	761	1.9	4,252.3	4,252.3	4,252.7	0.4
G	6,100	36/18[2]	271	5.4	4,252.5	4,252.5	4,253.1	0.6
H	6,813	66/36[2]	464	3.3	4,253.7	4,253.7	4,254.7	1.0
I	6,903	77/42[2]	589	2.6	4,254.0	4,254.0	4,254.9	0.9
J	7,300	30/10[2]	235	6.5	4,254.0	4,254.0	4,255.0	1.0
K	7,886	19/9[2]	188	8.0	4,256.4	4,256.4	4,256.9	0.5
L	8,230	68/13[2]	466	3.3	4,257.9	4,257.9	4,258.3	0.4
M	8,765	42	212	7.3	4,259.1	4,259.1	4,259.7	0.6
N	8,815	46	323	4.8	4,259.8	4,259.8	4,260.4	0.6
O	9,500	322/227[2]	1,717	0.9	4,260.4	4,260.4	4,261.0	0.6
P	10,100	152[3]	821	1.9	4,260.5	4,260.5	4,261.1	0.6
Q	10,842	329[3]	1,231	1.2	4,263.9	4,263.9	4,263.9	0.0
R	11,500	165/120[2]	508	3.0	4,264.1	4,264.1	4,264.1	0.0
S	11,864	146/126[2]	523	2.9	4,264.4	4,264.4	4,264.8	0.4
T	12,064	20/10[2]	219	7.0	4,268.9	4,268.9	4,268.9	0.0
U	12,104	208/33[2]	1,171	1.3	4,270.5	4,270.5	4,270.5	0.0
V	12,800	267/72[2]	1,454	1.1	4,270.6	4,270.6	4,270.6	0.0
W	13,500	76/31[2]	427	2.9	4,270.6	4,270.6	4,270.6	0.0
X	14,300	65/25[2]	268	4.3	4,271.2	4,271.2	4,271.2	0.0
Y	15,050	59/39[2]	290	3.7	4,272.9	4,272.9	4,273.4	0.5
Z	15,800	39/19[2]	174	6.2	4,274.8	4,274.8	4,275.7	0.9

[1]Feet Above Mouth [2]Width/Width Within Unincorporated Areas of Salt Lake County
[3]Floodway Is Located Entirely Outside Unincorporated Areas of Salt Lake County

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

FLOODWAY DATA

BIG COTTONWOOD CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE
Big Cottonwood Creek (Cont'd)								
AA	19,003	20	120	7.6	4,292.8	4,292.8	4,292.8	0.0
AB	19,023	183	464	2.0	4,293.4	4,293.4	4,293.4	0.0
AC	19,750	36	125	7.3	4,293.7	4,293.7	4,294.7	1.0
AD	21,250	25	153	5.9	4,304.2	4,304.2	4,304.9	0.7
AE	22,260	26	136	6.7	4,309.0	4,309.0	4,309.5	0.5
AF	22,450	29	157	5.7	4,310.0	4,310.0	4,311.0	1.0
AG	22,480	52	201	4.4	4,310.6	4,310.6	4,311.4	0.8
AH	23,240	26	150	5.2	4,315.3	4,315.3	4,316.1	0.8
AI	23,420	27	181	4.2	4,315.7	4,315.7	4,316.7	1.0
AJ	24,000	20	108	6.2	4,319.7	4,319.7	4,320.2	0.5
AK	24,190	21	117	5.5	4,324.6	4,324.6	4,324.6	0.0
AL	24,250	115	208	6.8	4,325.6	4,325.6	4,325.7	0.1
AM	24,750	73	179	7.9	4,329.3	4,329.3	4,329.3	0.0
AN	25,570	21	109	13.0	4,335.2	4,335.2	4,335.2	0.0
AO	25,690	312	814	1.7	4,339.8	4,339.8	4,340.1	0.3
AP	26,170	44	202	7.0	4,340.1	4,340.1	4,340.9	0.8
AQ	27,152	23	177	8.0	4,348.8	4,348.8	4,349.7	0.9
AR	27,500	50	166	8.2	4,350.3	4,350.3	4,350.9	0.6
AS	27,800	103	462	2.9	4,356.1	4,356.1	4,356.1	0.0
AT	28,350	36	173	7.2	4,356.2	4,356.2	4,356.8	0.6
AU	28,483	39	221	5.6	4,360.4	4,360.4	4,360.4	0.0
AV	28,635	38	164	7.4	4,360.6	4,360.6	4,360.7	0.1
AW	29,140	167	300	3.8	4,368.4	4,368.4	4,369.2	0.8
AX	29,400	162	577	1.9	4,371.8	4,371.8	4,372.3	0.5
AY	29,722	29	172	6.3	4,373.8	4,373.8	4,374.5	0.7
AZ	29,850	24	130	8.2	4,374.9	4,374.9	4,375.2	0.3

[1]Feet Above Mouth

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

FLOODWAY DATA

BIG COTTONWOOD CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Big Cottonwood Creek (Cont'd)								
BA	30,030	21	143	7.3	4,376.9	4,376.9	4,377.9	1.0
BB	30,100	64	323	3.2	4,378.2	4,378.2	4,378.8	0.6
BC	30,600	23	87	11.2	4,381.1	4,381.1	4,381.1	0.0
BD	31,100	38	160	5.6	4,387.6	4,387.6	4,388.5	0.9
BE	31,843	21	113	7.2	4,394.0	4,394.0	4,394.0	0.0
BF	31,900	32	116	7.0	4,394.6	4,394.6	4,394.8	0.2
BG	32,200	31	150	5.4	4,396.8	4,396.8	4,397.4	0.6
BH	32,800	52	169	4.8	4,400.7	4,400.7	4,400.9	0.2
BI	33,540	25	143	5.7	4,406.2	4,406.2	4,406.8	0.6
BJ	33,590	156	247	3.3	4,406.9	4,406.9	4,407.2	0.3
BK	34,700	44	157	5.2	4,417.0	4,417.0	4,417.1	0.1
BL	35,750	84	178	4.6	4,427.4	4,427.4	4,427.4	0.0
BM	36,275	145	285	2.9	4,430.4	4,430.4	4,430.4	0.0
BN	37,500	34	135	6.0	4,444.0	4,444.0	4,444.8	0.8
BO	38,000	34	114	7.2	4,448.5	4,448.5	4,449.4	0.9
BP	38,500	116	174	4.7	4,457.0	4,457.0	4,457.0	0.0
BQ	39,100	49	125	6.5	4,464.6	4,464.6	4,465.3	0.7
BR	39,600	54	131	6.2	4,472.6	4,472.6	4,472.6	0.0
BS	39,940	19	93	8.7	4,478.9	4,478.9	4,478.9	0.0
BT	40,550	100	127	6.4	4,492.0	4,492.0	4,492.0	0.0
BU	40,700	188	274	3.0	4,493.4	4,493.4	4,494.2	0.8
BV	41,550	20	108	7.5	4,512.1	4,512.1	4,512.1	0.0
BW	41,850	55	117	6.9	4,515.8	4,515.8	4,516.0	0.2
BX	42,300	41	94	8.7	4,524.0	4,524.0	4,524.3	0.3
BY	42,450	51	101	8.1	4,526.9	4,526.9	4,526.9	0.0
BZ	42,650	55	115	7.1	4,533.5	4,533.5	4,533.8	0.3

[1]Feet Above Mouth

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

FLOODWAY DATA

BIG COTTONWOOD CREEK

27

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Big Cottonwood Creek (Cont'd)								
CA	43,100	56	151	5.4	4,544.4	4,544.4	4,545.0	0.6
CB	43,450	53	215	3.8	4,555.8	4,555.8	4,556.7	0.9
CC	43,580	22	159	5.1	4,557.7	4,557.7	4,558.4	0.7
CD	43,950	38	130	6.3	4,566.6	4,566.6	4,567.0	0.4
CE	44,150	35	171	4.8	4,570.8	4,570.8	4,571.8	1.0
CF	44,800	21	96	8.5	4,583.3	4,583.3	4,584.1	0.8
CG	45,113	27	126	6.5	4,594.3	4,594.3	4,595.2	0.9
CH	45,850	35	121	6.7	4,612.2	4,612.2	4,612.5	0.3
CI	46,450	26	125	6.5	4,629.4	4,629.4	4,629.7	0.3
CJ	46,730	17	122	6.7	4,639.2	4,639.2	4,639.2	0.0
CK	46,800	59	275	3.0	4,640.5	4,640.5	4,640.5	0.0
CL	47,050	40	93	8.7	4,644.3	4,644.3	4,644.3	0.0
CM	47,300	49	179	4.5	4,654.3	4,654.3	4,654.7	0.4
CN	47,900	48	190	4.3	4,667.9	4,667.9	4,668.7	0.8
CO	48,300	40	177	4.6	4,678.7	4,678.7	4,679.1	0.4
CP	48,700	61	173	4.7	4,689.1	4,689.1	4,689.7	0.6
CQ	49,100	38	126	6.4	4,699.8	4,699.8	4,700.4	0.6
CR	49,500	34	131	6.2	4,713.9	4,713.9	4,714.2	0.3
CS	49,600	19	129	6.3	4,717.9	4,717.9	4,717.9	0.0
CT	50,500	43	143	5.7	4,747.1	4,747.1	4,747.1	0.0
CU	50,900	65	199	4.1	4,757.1	4,757.1	4,757.5	0.4
CV	51,500	49	211	3.9	4,768.8	4,768.8	4,769.5	0.7
CW	51,700	48	134	6.1	4,775.4	4,775.4	4,775.8	0.4
CX	52,350	122	227	3.6	4,801.5	4,801.5	4,802.4	0.9
CY	52,500	50	216	3.8	4,815.0	4,815.0	4,815.1	0.1
CZ	52,900	112	237	3.4	4,836.1	4,836.1	4,836.1	0.0

[1] Feet Above Mouth

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

FLOODWAY DATA

BIG COTTONWOOD CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE
Big Cottonwood Creek (Cont'd)								
DA	53,500	80	281	2.9	4,871.9	4,871.9	4,872.0	0.1
DB	53,840	19	143	5.7	4,890.9	4,890.9	4,891.9	1.0
DC	53,900	60	291	2.8	4,894.6	4,894.6	4,894.9	0.3

[1]Feet Above Mouth

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

FLOODWAY DATA

BIG COTTONWOOD CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE
Little Cottonwood Creek								
A	18,800	55	189	4.8	4,348.7	4,348.7	4,349.3	0.6
B	19,120	16	128	7.1	4,352.7	4,352.7	4,352.7	0.0
C	19,200	22	119	7.7	4,353.3	4,353.3	4,353.3	0.0
D	19,510	47	94	9.9	4,358.1	4,358.1	4,358.1	0.0
E	19,580	74	142	7.0	4,359.2	4,359.2	4,359.2	0.0
F	20,300	102	212	6.1	4,364.5	4,364.5	4,364.7	0.2
G	20,310	80	178	7.3	4,364.6	4,364.6	4,364.6	0.0
H	21,130	57	159	8.2	4,370.7	4,370.7	4,370.9	0.2
I	21,490	48	314	4.2	4,377.0	4,377.0	4,377.9	0.9
J	22,100	106	153	8.5	4,380.5	4,380.5	4,380.7	0.2
K	22,820	51	184	7.1	4,384.4	4,384.4	4,385.4	1.0
L	23,220	51	319	4.1	4,391.3	4,391.3	4,391.9	0.6
M	23,410	43	270	4.8	4,392.3	4,392.3	4,392.9	0.6
N	23,520	23	178	7.3	4,397.7	4,397.7	4,397.7	0.0
O	23,930	171	227	5.7	4,400.3	4,400.3	4,400.8	0.5
P	24,060	151	407	3.2	4,401.6	4,401.6	4,402.6	1.0
Q	25,000	46	180	7.3	4,412.6	4,412.6	4,413.2	0.6
R	25,590	49	179	7.3	4,419.7	4,419.7	4,420.6	0.9
S	25,730	82	315	4.1	4,422.2	4,422.2	4,422.6	0.4
T	26,310	54	257	5.1	4,427.1	4,427.1	4,428.0	0.9
U	26,670	22	194	6.6	4,432.9	4,432.9	4,433.5	0.6
V	27,020	51	189	6.5	4,434.7	4,434.7	4,434.8	0.1
W	27,370	41	136	8.2	4,438.3	4,438.3	4,438.5	0.2
X	27,690	47	186	6.3	4,441.9	4,441.9	4,442.6	0.7
Y	28,170	12	126	8.9	4,451.5	4,451.5	4,451.5	0.0
Z	28,240	62	310	3.6	4,452.8	4,452.8	4,452.8	0.0

[1] Feet Above Mouth

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

TABLE 4

FLOODWAY DATA

LITTLE COTTONWOOD CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE
Little Cottonwood Creek (Cont'd)								
AA	28,740	44	117	9.3	4,455.4	4,455.4	4,455.9	0.5
AB	29,080	20	142	7.4	4,461.0	4,461.0	4,461.6	0.6
AC	29,240	46	211	4.9	4,462.4	4,462.4	4,462.9	0.5
AD	29,990	41	112	9.2	4,468.1	4,468.1	4,468.2	0.1
AE	30,540	88	253	4.1	4,477.3	4,477.3	4,477.6	0.3
AF	30,840	39	136	6.7	4,479.4	4,479.4	4,480.2	0.8
AG	31,170	175	410	2.5	4,483.5	4,483.5	4,483.9	0.4
AH	31,470	38	149	7.0	4,485.8	4,485.8	4,486.6	0.8
AI	31,850	79	254	4.1	4,491.7	4,491.7	4,491.9	0.2
AJ	32,220	56	194	4.6	4,494.2	4,494.2	4,494.7	0.5
AK	32,440	39	117	8.9	4,498.1	4,498.1	4,498.1	0.0
AL	32,610	28	133	7.8	4,501.7	4,501.7	4,502.3	0.6
AM	33,150	135	393	2.6	4,506.4	4,506.4	4,507.3	0.9
AN	33,580	58	121	6.9	4,513.3	4,513.3	4,513.3	0.0
AO	34,280	47	166	6.2	4,522.4	4,522.4	4,522.6	0.2
AP	34,360	44	131	7.9	4,523.4	4,523.4	4,523.8	0.4
AQ	34,950	57	209	5.0	4,531.0	4,531.0	4,531.6	0.6
AP	35,470	89	193	5.4	4,538.5	4,538.5	4,538.5	0.0
AS	35,900	139	275	3.8	4,543.5	4,543.5	4,544.3	0.8
AT	36,430	64	177	5.9	4,552.0	4,552.0	4,552.4	0.4
AU	37,120	82	265	3.9	4,563.8	4,563.8	4,563.8	0.0
AV	38,490	42	221	4.7	4,584.2	4,584.2	4,584.5	0.3
AW	38,680	20	135	7.7	4,585.3	4,585.3	4,586.1	0.8
AX	38,920	60	125	8.3	4,589.3	4,589.3	4,589.3	0.0
AY	39,850	37	138	6.5	4,603.0	4,603.0	4,603.2	0.2
AZ	40,280	49	190	3.9	4,612.4	4,612.4	4,612.4	0.0

[1]Feet Above Mouth

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

FLOODWAY DATA

LITTLE COTTONWOOD CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE[3] (FEET NGVD)
Little Cottonwood Creek (Cont'd)								
BA	41,170	53	205	3.7	4,627.4	4,627.4	4,628.1	0.7
BB	41,720	51	156	4.8	4,635.2	4,635.2	4,635.5	0.3
BC	42,190	44	113	9.1	4,643.1	4,643.1	4,643.3	0.2
BD	42,260	143	440	2.4	4,645.6	4,645.6	4,646.6	1.0
BE	42,410	79	342	3.0	4,646.7	4,646.7	4,647.4	0.7
BF	42,8[illegible]0	51	173	6.0	4,653.7	4,653.7	4,653.8	0.1
BG	43,070	22	148	7.0	4,657.3	4,657.3	4,657.6	0.3
BH	43,170	44	249	4.2	4,658.4	4,658.4	4,658.9	0.5
BI	43,450	51	172	6.0	4,660.0	4,660.0	4,660.6	0.6
BJ	44,070	30	154	6.7	4,669.5	4,669.5	4,669.5	0.0
BK	44,320	50	164	6.1	4,673.8	4,673.8	4,673.8	0.0
BL	44,940	35	114	8.8	4,682.5	4,682.5	4,682.5	0.0
BM	46,340	46	138	7.3	4,706.3	4,706.3	4,706.3	0.0
BN	46,820	39	145	6.9	4,715.4	4,715.4	4,715.4	0.0
BO	47,780	42	175	5.7	4,739.5	4,739.5	4,739.5	0.0
BP	48,200	40	161	6.2	4,749.2	4,749.2	4,749.2	0.0
BQ	48,360	19	159	6.3	4,761.9	4,761.9	4,761.9	0.0
BR	48,400	100	225	4.5	4,763.4	4,763.4	4,763.4	0.0
BS	48,500	225	640	1.6	4,763.9	4,763.9	4,763.9	0.0
BT	49,070	51	149	6.6	4,774.2	4,774.2	4,774.2	0.0
BU	49,830	73	147	7.1	4,791.3	4,791.3	4,791.7	0.4
BV	50,060	50	135	7.4	4,801.4	4,801.4	4,801.4	0.0
BW	50,640	43	160	6.3	4,816.0	4,816.0	4,816.2	0.2
BX	50,820	38	105	9.5	4,821.3	4,821.3	4,821.3	0.0
BY	50,230	40	111	9.0	4,836.9	4,836.9	4,836.9	0.0
BZ	51,470	43	141	7.1	4,845.4	4,845.4	4,845.4	0.0

[1] Feet Above Mouth

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

FLOODWAY DATA

LITTLE COTTONWOOD CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Little Cottonwood Creek (Cont'd)								
CA	51,830	47	220	4.5	4,860.0	4,860.0	4,860.2	0.2
CB	52,180	47	197	5.3	4,869.4	4,869.4	4,869.6	0.2
CC	52,430	62	264	3.8	4,881.8	4,881.8	4,881.8	0.0
CD	52,950	64	258	3.9	4,897.4	4,897.4	4,897.5	0.1
CE	53,170	38	106	9.5	4,907.2	4,907.2	4,907.2	0.0
CF	53,460	54	209	4.8	4,922.7	4,922.7	4,923.3	0.6
CG	53,750	38	133	7.5	4,937.2	4,937.2	4,937.2	0.0
CH	54,050	33	116	8.7	4,956.5	4,956.5	4,956.7	0.2
CI	54,690	27	197	5.1	4,997.8	4,997.8	4,998.3	0.5
CJ	55,340	31	114	8.8	5,030.1	5,030.1	5,030.3	0.2
CK	55,780	33	131	7.7	5,047.6	5,047.6	5,047.6	0.0
CL	55,860	29	97	10.3	5,054.6	5,054.6	5,054.6	0.0
CM	56,240	44	111	9.0	5,069.6	5,069.6	5,069.6	0.0
CN	56,340	46	125	8.0	5,077.5	5,077.5	5,077.6	0.1
CO	56,500	23	157	6.4	5,083.1	5,083.1	5,084.0	0.9
CP	56,580	37	258	3.9	5,084.9	5,084.9	5,085.4	0.5

[1]Feet Above Mouth

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

FLOODWAY DATA

LITTLE COTTONWOOD CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE
Dry Creek								
A	11,320	58/29[2]	158	2.5	4,378.2	4,378.2	4,378.8	0.6
B	19,600	30	297	1.7	4,491.1	4,491.1	4,491.1	0.0
C	20,610	33	113	4.5	4,495.7	4,495.7	4,496.7	1.0
D	20,965	70	118	4.3	4,502.8	4,502.8	4,503.7	0.9
E	21,740	42	98	5.2	4,511.7	4,511.7	4,512.2	0.5
F	23,550	24	66	7.7	4,545.8	4,545.8	4,546.7	0.9
G	25,400	76	94	5.4	4,574.6	4,574.6	4,574.6	0.0
H	26,530	30	54	7.7	4,595.2	4,595.2	4,595.2	0.0
I	28,580	25	51	8.2	4,630.1	4,630.1	4,631.1	1.0
J	28,930	67	115	3.7	4,639.6	4,639.6	4,639.9	0.3
K	29,810	30	62	6.8	4,653.7	4,653.7	4,654.1	0.4
L	30,690	35	58	7.2	4,669.0	4,669.0	4,669.0	0.0
M	31,735	17	55	7.6	4,686.1	4,686.1	4,687.1	1.0
N	33,430	30	55	7.7	4,714.6	4,714.6	4,715.3	0.7
O	34,790	54	67	6.3	4,739.2	4,739.2	4,739.2	0.0
P	35,750	20	62	6.8	4,755.8	4,755.8	4,756.6	0.8
Q	36,280	71	160	2.6	4,763.5	4,763.5	4,764.1	0.6
R	36,750	24	51	8.3	4,769.7	4,769.7	4,769.9	0.2
S	37,530	12	47	9.0	4,783.1	4,783.1	4,784.0	0.9
T	38,950	29	61	7.0	4,817.2	4,817.2	4,817.4	0.2
U	39,410	54	162	2.6	4,824.2	4,824.2	4,824.8	0.6
V	40,340	35	83	5.1	4,835.3	4,835.3	4,835.9	0.6
W	41,200	16	45	9.5	4,852.4	4,852.4	4,852.5	0.1
X	41,870	46	52	6.2	4,872.1	4,872.1	4,872.1	0.0
Y	42,760	21	40	7.9	4,921.8	4,921.8	4,921.9	0.1
Z	43,610	15	36	8.9	5,005.7	5,005.7	5,005.7	0.0
AA	43,730	22	41	7.8	5,020.9	5,020.9	5,020.9	0.0

[1]Feet Above Mouth [2]Width/Width Within Unincorporated Areas of Salt Lake County

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

FLOODWAY DATA

DRY CREEK

The area between the floodway and 100-year flood plain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.

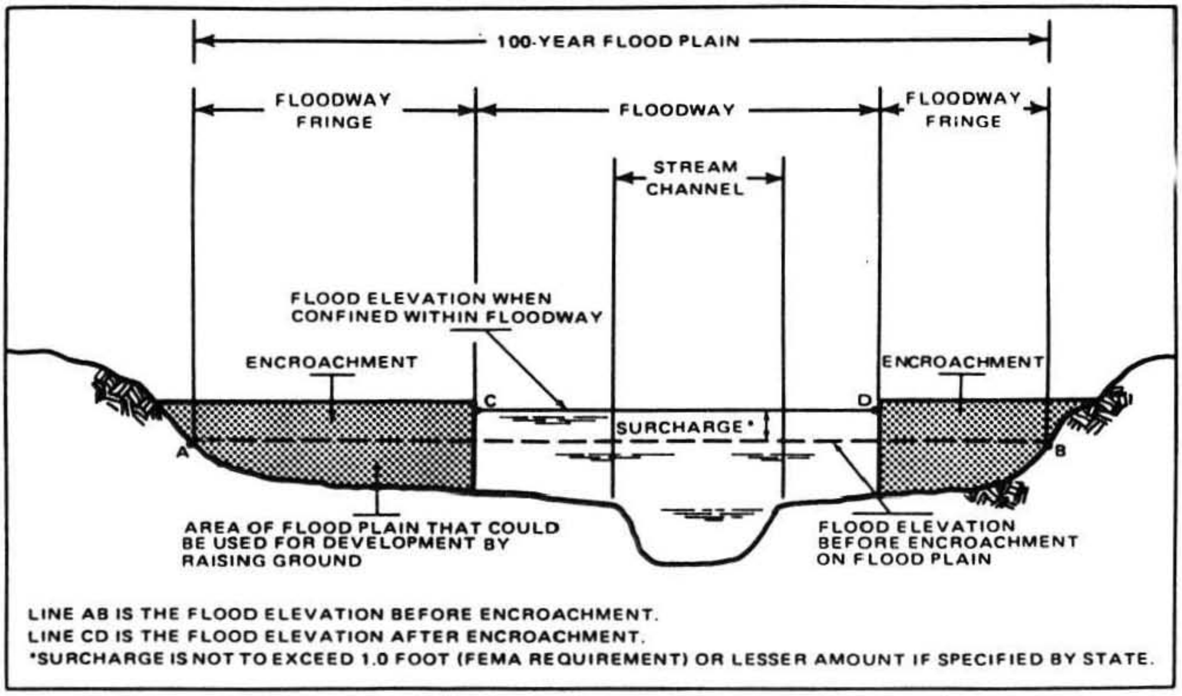

Figure 2. Floodway Schematic

5.0 INSURANCE APPLICATION

To establish actuarial insurance rates, data from the engineering study must be transformed into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors, and flood insurance zone designations for each flooding source studied in detail affecting Salt Lake County.

5.1 Reach Determinations

Reaches are defined as sections of flood plain that have relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference may not have a variation greater than that indicated in the following table for more than 20 percent of the reach:

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE
Willow Creek								
A	9,150	80	963	0.3	4,697.1	4,697.1	4,697.1	0.0

[1]Feet Above a Point Located 70 Feet Downstream of the Union Pacific Railroad

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

FLOODWAY DATA

WILLOW CREEK

Average Difference Between 10- and 100-Year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

5.2 Flood Hazard Factors

The Flood Hazard Factor (FHF) is used to establish relationships between depth and frequency of flooding in any reach. This relationship is then used with depth-damage relationships for various classes of structures to establish actuarial insurance rate tables.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations rounded to the nearest one-half foot, multiplied by 10, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year flood water-surface elevations is greater than 10.0 feet, it is rounded to the nearest whole foot.

5.3 Flood Insurance Zones

Flood insurance zones and zone numbers are assigned based on the type of flood hazard and the FHF, respectively. A unique zone number is associated with each possible FHF, and varies from 1 for a FHF of 005 to a maximum of 30 for a FHF of 200 or greater.

Zone A: Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or FHFs determined.

Zone AH: Special Flood Hazard Areas inundated by types of 100-year shallow flooding where depths are between 1.0 and 3.0 feet; base flood elevations are shown, but no FHFs are determined.

Zones A1-A4, A10, and A12: Special Flood Hazard Areas inundated by the 100-year flood; with base flood elevations shown, and zones subdivided according to FHFs.

Zone B: Areas between the Special Flood Hazard Areas and the limits of the 500-year flood; areas that are protected from the 100- or 500-year floods by dike, levee, or other local water-control structure; areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.

Zone C: Areas of minimal flood hazard; not subdivided.

Zone D: Areas of undetermined, but possible flood hazard.

The flood elevation differences, FHFs, flood insurance zones, and base flood elevations for each flooding source studied in detail in the county are summarized in Table 5.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for Salt Lake County is, for insurance purposes, the principal product of the Flood Insurance Study. This map contains the official delineation of flood insurance zones and base flood elevations. Base flood elevation lines show the locations of the expected whole-foot water-surface elevation of the base (100-year) flood. The base flood elevations and zone numbers are used by insurance agents, in conjunction with structure elevations and characteristics, to assign actuarial insurance rates to structures and contents insured under the NFIP.

6.0 OTHER STUDIES

Flood Insurance Studies are being prepared for the Cities of Draper, Murray, Sandy City, South Jordan, and South Salt Lake (References 23, 24, 25, 26, and 27, respectively), all of which are located in Salt Lake County. The results of those Flood Insurance Studies will agree with this study. A Flood Insurance Study has been prepared for the City of Salt Lake City (Reference 28). Approximate flooding from the Great Salt Lake has not been shown in Salt Lake City. Also, a revised hydraulic analysis for Emigration Creek causes a difference in flood elevations between this study and the study for Salt Lake City. The Jordan River was studied by detailed methods in Salt Lake City, but was studied by approximate methods in the county upstream of the city; therefore, zone designations differ at the corporate limits. In all other respects, the studies are in agreement.

Flood Insurance Studies have been prepared for Davis and Utah Counties, and a Flood Insurance Rate Map has been prepared for the City of North Salt Lake (References 29, 30, and 31, respectively). The section of the

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1% (100-YEAR) FLOOD AND 10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)	FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION (FEET NGVD)[3]
Jordan River							
Reach 1	**0129,0133 0137**	**-0.4**	**-0.2**	**0.3**	**005**	**A1**	**Varies - See Map**
Shallow Flooding	**0129**	**N/A**	**N/A**	**N/A**	**N/A**	**AH**	**4210**
Emigration Creek							
Reach 1	**0168,0169 0186,0187 0188**	**-0.9**	**-0.3**	**0.6**	**010**	**A2**	**Varies - See Map**
Burr Fork							
Reach 1	**0187**	**-0.8**	**-0.2**	**0.5**	**010**	**A2**	**Varies - See Map**
Parleys Creek							
Reach 1	**0304,0308**	**-1.3**	**-0.4**	**2.5**	**015**	**A3**	**Varies - See Map**
Mill Creek							
Reach 1	**0303**	**-0.4**	**-0.2**	**1.4**	**005**	**A1**	**Varies - See Map**
Reach 2	**0303,0304 0308**	**-0.8**	**-0.3**	**2.1**	**010**	**A2**	**Varies - See Map**
Reach 3	**0308**	**-1.6**	**-0.6**	**8.5**	**015**	**A3**	**Varies - See Map**
Reach 4	**0308**	**-2.0**	**-0.5**	**3.8**	**020**	**A4**	**Varies - See Map**
Reach 5	**0308**	**-1.5**	**-0.3**	**3.6**	**015**	**A3**	**Varies - See Map**
Big Cottonwood Creek							
Reach 1	**0292**	**-2.0**	**-0.9**	**3.5**	**020**	**A4**	**Varies - See Map**
Reach 2	**0292,0311 0312,0314 0318,0456**	**-0.7**	**-0.3**	**0.9**	**005**	**A1**	**Varies - See Map**

[1]Flood Insurance Rate Map Panel [2]Weighted Average [3]Rounded to Nearest Foot

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

JORDAN RIVER-EMIGRATION CREEK-BURR FORK-PARLEYS CREEK-MILL CREEK-BIG COTTONWOOD CREEK

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1% (100-YEAR) FLOOD AND 10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)	FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION[3] (FEET NGVD)
Little Cottonwood Creek							
Reach 1	0313,0451 0452,0456 0458	-0.8	-0.4	2.4	010	A2	Varies - See Map
Dry Creek							
Reach 1	0434	-1.5	-1.0	2.2	015	A3	Varies - See Map
Reach 2	0453	-6.1	-4.9	18.1	060	A12	4491
Reach 3	0453	-1.4	-1.1	5.6	015	A3	Varies - See Map
Reach 4	0453,0458 0461,0462 0466	-1.8	-1.3	2.9	020	A4	Varies - See Map
Willow Creek							
Reach 1	0462	-5.0	-2.0	4.0	050	A10	4697

[1]Flood Insurance Rate Map Panel [2]Weighted Average [3]Rounded to Nearest Foot

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

40

LITTLE COTTONWOOD CREEK-DRY CREEK-WILLOW CREEK

Jordan River studied in detail downstream of Salt Lake City was studied by approximate methods in Davis County and North Salt Lake. In all other respects, the studies are in agreement.

Flood Hazard Boundary Maps have been prepared for the Cities of Midvale, West Jordan, and West Valley City (References 32, 33, and 34, respectively) and for Morgan, Summit, and Wasatch Counties (References 35, 36, and 37, respectively). A Flood Insurance Rate Map is being prepared for the City of Riverton (Reference 38). Those maps agree with the results of this study.

A Flood Hazard Boundary Map has been published for Salt Lake County (Reference 1). This map was used as a source of approximate flood boundaries in some portions of this study. In areas studied by detailed methods, this study represents a more recent and comprehensive analysis and, therefore, supersedes the Flood Hazard Boundary Map.

Flood plain information reports have been prepared by the COE for the Jordan River and its major tributaries (References 2 and 3). These reports include analyses of the Jordan River and Parleys, Mill, Big Cottonwood, Little Cottonwood, Dry, and Willow Creeks. Due to different values used for parameters such as infiltration rates and permeability, and different hydrologic methodologies, the discharges used for these streams in this study are generally lower than those given in the flood plain information reports. Additionally, there are differences between this study and the flood plain information reports due to revised hydraulic analyses and the use of more recent and detailed topographic mapping. The 100-year flood boundaries for the Jordan River, between Salt Lake City and South Jordan, were used to supplement approximate flood boundaries in areas not covered by the Flood Hazard Boundary Map.

A report by the COE entitled Jordan River Investigation, Utah (Reference 8) was the source of hydrologic and hydraulic analyses and flood boundary delineations for Mill, Big Cottonwood, and Little Cottonwood Creeks (except where revised as noted in the appropriate sections).

A recent report prepared by the COE (Reference 39) reevaluated the frequency of flood discharges along Mill, Big Cottonwood, and Little Cottonwood Creeks. This report considered the impacts of the extreme flood of September 1983 and of recent urban development. The COE report indicates that discharges along these three streams, in general, are larger than those used in this study; however, they are not significantly larger statistically. Changes have occurred along the stream channels since the September 1983 flood and additional changes are ongoing or planned. An assessment of the preciseness of discharge rates and the reliability of available hydraulic channel information suggests that future flood hazards along Mill, Big Cottonwood, and Little Cottonwood Creeks are defined in this study within the range of currently attainable reliability.

Following the disastrous flooding along Utah Lake and the Jordan River in 1983 and 1984, Salt Lake County and Utah County officials commissioned an investigation by CH2M HILL, Inc., of remedial measures to mitigate future flood losses. The resulting report (Reference 40) proposed channel modifications on the Jordan River, a flow control structure for Utah Lake, and a plan for regulating Utah Lake outflows. These proposals were based on design discharge values established through an analysis of historical Jordan River and tributary floodflow records and a synthesis of impacts of controlled releases from Utah Lake. These design discharges are shown in Table 6. The design discnarges were used in a hydraulic step-backwater model (Reference 12) of the Jordan River which assumed all proposed channel modifications to be in place. This analysis resulted in a water-surface profile shown in this Flood Insurance Study as the Utah Lake/Jordan River Flood Management Plan Profiles. No comparison or correlation between these profiles and the data presented in this study can be made or is intended. Most of the Jordan River channel modifications and the Utah Lake outflow control structure have not been completed. The proposed plan for regulating outflows from Utah Lake is not being used at present.

This study is authoritative for the purpose of the NFIP; data presented herein either supersede or are compatible with all previous determinations.

7.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, Building 710, Denver Federal Center, Lakewood, Colorado 80225.

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Table 6. Jordan River Proposed Design Discharges

Location	Design Discharge (cfs)[1]
2100 South Street to Mill Creek Confluence	4,500
Mill Creek Confluence to Big Cottonwood Creek Confluence	4,500
Big Cottonwood Creek Confluence to Little Cottonwood Creek Confluence	4,380
Little Cottonwood Creek Confluence to 5800 South Street (Bullion Street)	3,870
5800 South Street (Bullion Street) to 9400 South Street	3,330
9400 South Street to Jordan Narrows	3,260
Above Jordan Narrows	

[1]Source of Discharge Data: Utah Lake/Jordan River Flood Management Plan, Phase I Report (Reference 40)

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9.0 REVISIONS DESCRIPTION

This section has been added to provide information regarding significant revisions made since the original Flood Insurance Study was printed. Future revisions may be made that do not result in the republishing of the Flood Insurance Study report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood hazard data located at the Salt Lake County Department of Public Works, Flood Control and Highway Division, 2001 South State Street, Number N3300, Salt Lake City, Utah 84190-4600.

9.1 First Revision

This study was revised on June 19, 1989 to incorporate the effects of a revised hydraulic analysis for a reach of Little Cottonwood Creek from Willow Creek Drive to a point approximately 5,000 feet upstream. This revised hydraulic analysis was based on more detailed topographic information for the referenced reach and prepared by Bush & Gudgell, Inc., Salt Lake City, Utah. The result

of this analysis was a descrease in the width of the SFHA and floodway along Little Cottonwood Creek between cross sections BT and BZ as shown on FIRM and FBFM Panels 0456 and 0458. The Floodway Data Table and Flood Profile Panels 102P and 103P have also been revised to reflect the effects of this revised hydraulic analysis.

This revision also incorporates the following Letters of Map Revision (LOMRs) issued for the unincorporated areas of Salt Lake County, Utah:

1. The LOMR issued on August 6, 1986, for an area along Little Willow Creek, as shown on FIRM Panel 0458. This LOMR was issued to reflect drainage improvements in the area of the Golden Oaks Subdivision which confirms the SFHA to an existing open channel and Oak Hollow Circle. In support of this LOMR, plans entitled "Drainage Improvements As-Built, Golden Oaks Subdivision," prepared by Bush & Gudgell, Inc., dated June 4, 1986, were submitted.

2. The LOMR issued on February 27, 1987, for an area along Mill Creek at Canyon Way, as shown on FIRM and FBFM Panel 0304. The LOMR was issued to show the effects of the construction of a bridge across Mill Creek at Canyon Way. In support of this LOMR, a revised hydraulic analysis of Mill Creek, a set of survey notes, and a revised flood profile, prepared by Urban Environments Ltd., Salt Lake City, Utah, were submitted. Flood Profile Panels 43P and 44P have also been revised to reflect this revision.

9.2 Second Revision

This study was revised on September 30, 1994, to include the restudy of the Jordan River conducted for FEMA by CH2M Hill under Contract No. EMW-90-C-3104. The restudy was completed in November 1992.

The Jordan River was studied in detail from the Utah - Salt Lake County line to the Surplus Canal diversion near 2100 South Street. The study area includes portions of the unincorporated areas of Salt Lake County, as well as portions of the Cities of West Valley, South Salt Lake, Murray, Midvale, West Jordan, South Jordan, Sandy, Riverton, Draper, Bluffdale, and Salt Lake City.

Hydrologic analyses were performed to establish discharge-frequency relationships at four locations in the study reach of the Jordan River. Historic streamflow data were analyzed in accordance with criteria outlined in Bulletin No. 17B, Guidelines for Determining Flood Flow Frequency (Reference 44).

Historic Utah Lake stage records beginning in 1884, and a high water reference of 1862, were used in conjunction with a stage-discharge curve to estimate historic natural discharges in the Jordan River. These data were used to supplement the U.S. Geological Survey (USGS) streamflow data to develop the discharge-frequency cur s. The locations, length of record, and operating agency, and type of record available for the streamflow gages used for this study are summarized in Table 2.

The streamflow gaging records for the Jordan River consist of two data populations as a result of the operational effects of the Compromise Agreement: natural releases and pumped releases (Reference 42). The two data populations were analyzed independently to develop flood flow frequency curves for snowmelt events, as it was determined that floods caused by snowmelt events are generally more severe than those caused by rainfall events. Flood peaks caused by rainfall events were not evaluated with peaks caused by snowmelt events so that the data populations would be homogeneous. The most severe snowmelt floods on the Jordan River are associated with natural releases and high levels of Utah Lake.

Discharge contributions to the Jordan River from Mill Creek, Big Cottonwood Creek, and Little Cottonwood Creek were based on estimated 100-year tributary discharges at the canyon mouths developed by the U.S. Army Corps of Engineers (USACE) (Reference 39).

The peak discharge-drainage area relationships developed for the Jordan River were added to Table 3.

The HEC-2 computer model developed by the study contractor as part of the Utah Lake/Jordan River Flood Management Program in 1984 was used as a basis for performing the hydraulic analyses of the Jordan River (Reference 40). The cross sections used to develop that model were field surveyed in June 1984 during the peak flow period. That model was calibrated to the 1984 event. To update the model developed in 1984, 78 additional cross sections were added to the 1984 model. Cross section data for approximately 38 of the supplemental cross sections were obtained from a 1987 survey where monumented cross sections were established between 2100 South and 14600 South to monitor erosion and deposition. The data for the remaining 40 cross sections were field surveyed in 1990 and 1991. Overbank and underwater data were obtained by field survey for all channel cross sections. In some areas (i.e., between 2100 South and the Mill Creek confluence) supplemental overbank cross section data were obtained from the 1990 orthophoto topographic maps provided by Salt Lake County (Reference 43). The portion of the HEC-2 model for the study reach upstream of Turner Dam was obtained from data developed by the USACE. All hydraulic structures were surveyed to obtain elevation and structural geometry data.

Water-surface elevations for floods of the selected recurrence intervals were computed using the HEC-2 Water Surface Profiles computer program developed by the USACE (Reference 44). Starting water-surface elevations were determined using the slope-area method.

Natural channel and overbank roughness factors (Mannings's "n") used in the hydraulic computations were chosen by engineering

judgment and based on field observations and of the stream and floodplain areas. Roughness values ranged from 0.022 to 0.077 for the natural main channel and from 0.075 to 0.225 for overbank areas. Main channel roughness coefficients of 0.012 and 0.013 were used to model flow through two of the concrete diversion structures on the river.

Orthophoto topographic maps with a scale of 1:4,800 and a contour interval of 4 feet, with 2-foot supplemental contours, were provided to the study contractor by Salt Lake County (Reference 43). The photograph date of the study area was November 11, 1990.

Five shallow flooding or ponding zones (Zone AH) are identified on the maps. One of these areas is located just downstream of the Big Cottonwood Creek confluence. Another is located just upstream of the 4500 South Street bridge. The other three are located between the south side of the Sharon Steel tailings pile and the North Jordan Diversion structure.

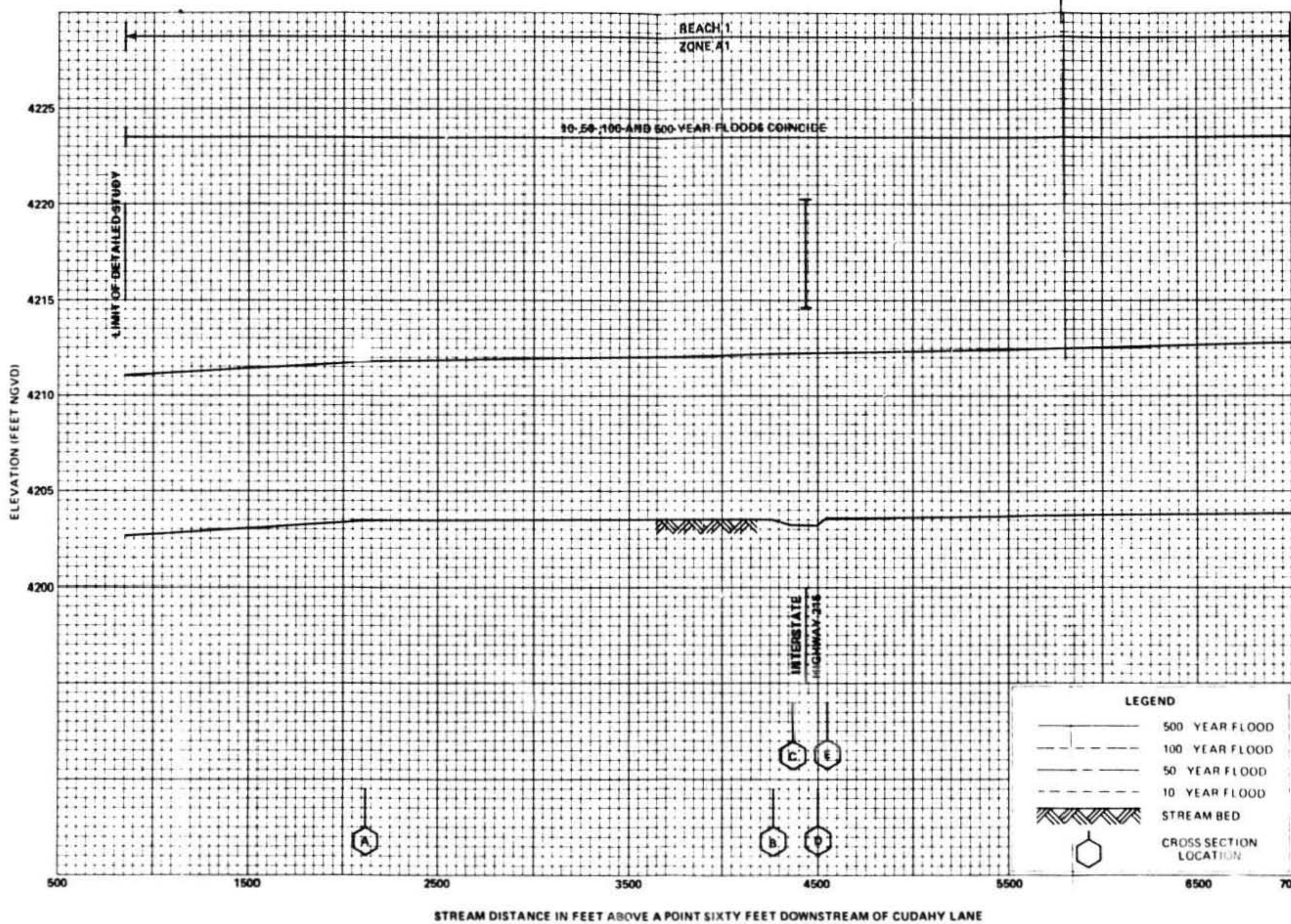
The AH Zone located just downstream of the Big Cottonwood Creek confluence is located in a low area behind a short levee. This levee is not a FEMA certified levee, it provides less than 3 feet of freeboard during the 100-year flood, and shallow flooding occasionally occurs in the area because of inadequate internal drainage facilities. The flood elevation in this area was assumed to be equal to the water-surface elevation in the Jordan River.

The other four AH Zones are shallow flooding areas in low overbank areas along the Jordan River. The flood elevations in those areas were estimated from the water surface in the river at the low points where water enters those areas.

Flood boundaries for the Jordan River were delineated using orthophoto topographic maps at a scale of 1:4,800 with a contour interval of 4 feet and supplemental 2-foot contours. The contours on these maps extend to a point that is either 1,000 feet from the channel or 10 feet above the top of the bank, whichever comes first. In areas where the floodplain exceeded contoured areas on the maps, USGS quadrangle maps were used to supplement the contours on the orthophoto topographic maps (Reference 17). In the west overbank area between 2100 South Street and the Decker Lake Drain, the orthophoto topographic map contour data were supplemented with contour data from 1985 orthophoto topographic mapping with a contour interval of 5 feet provided by West Valley City (Reference 45).

The Summary of Discharges Table and Floodway Data Table were revised to include data for the Jordan River, and Flood Profiles for the Jordan River were added.

As a part of this update, the Utah Lake/Jordan River Flood Management Plan Profiles (Jordan River) have been removed from this report.



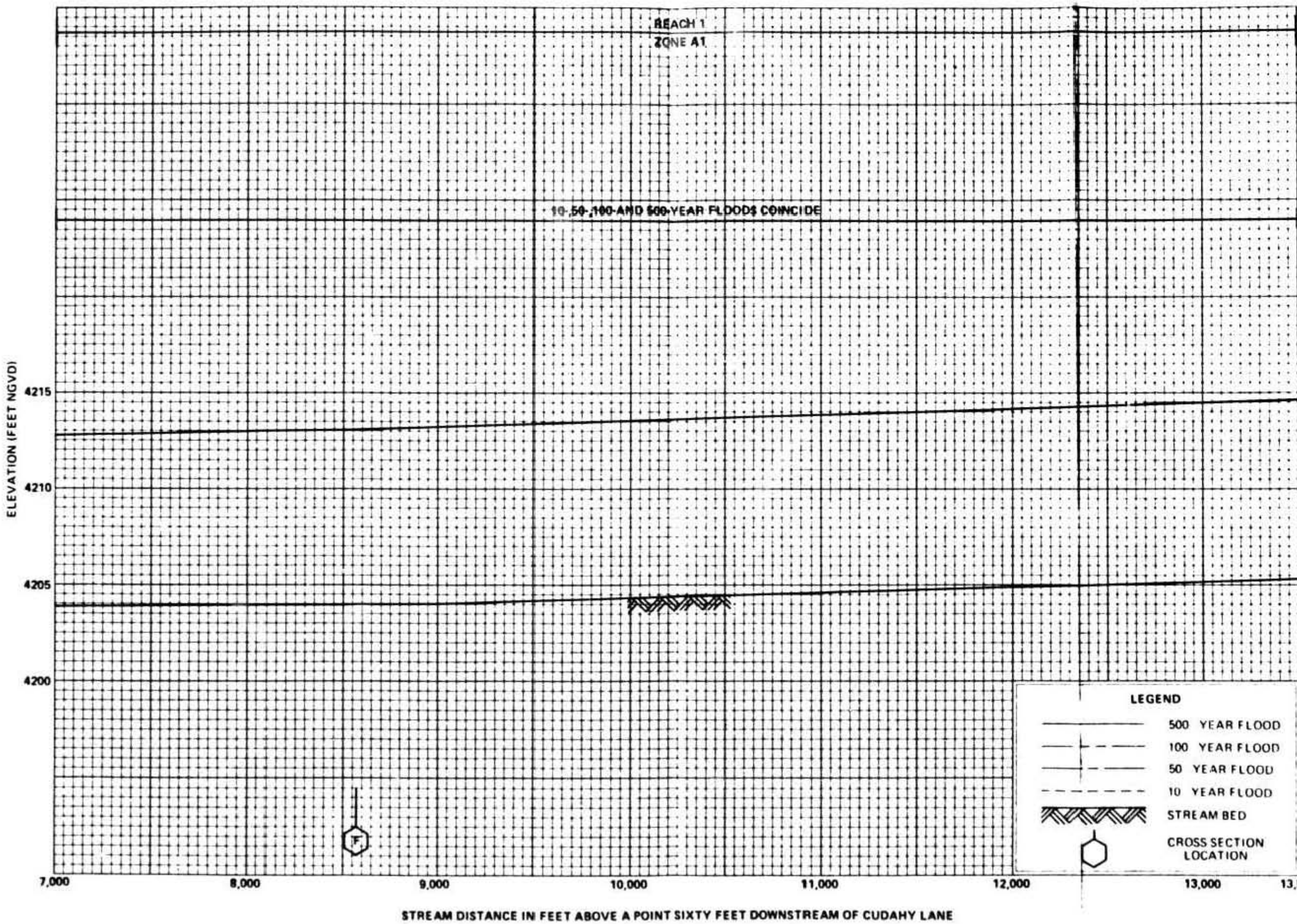
FLOOD PROFILES

JORDAN RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

01P



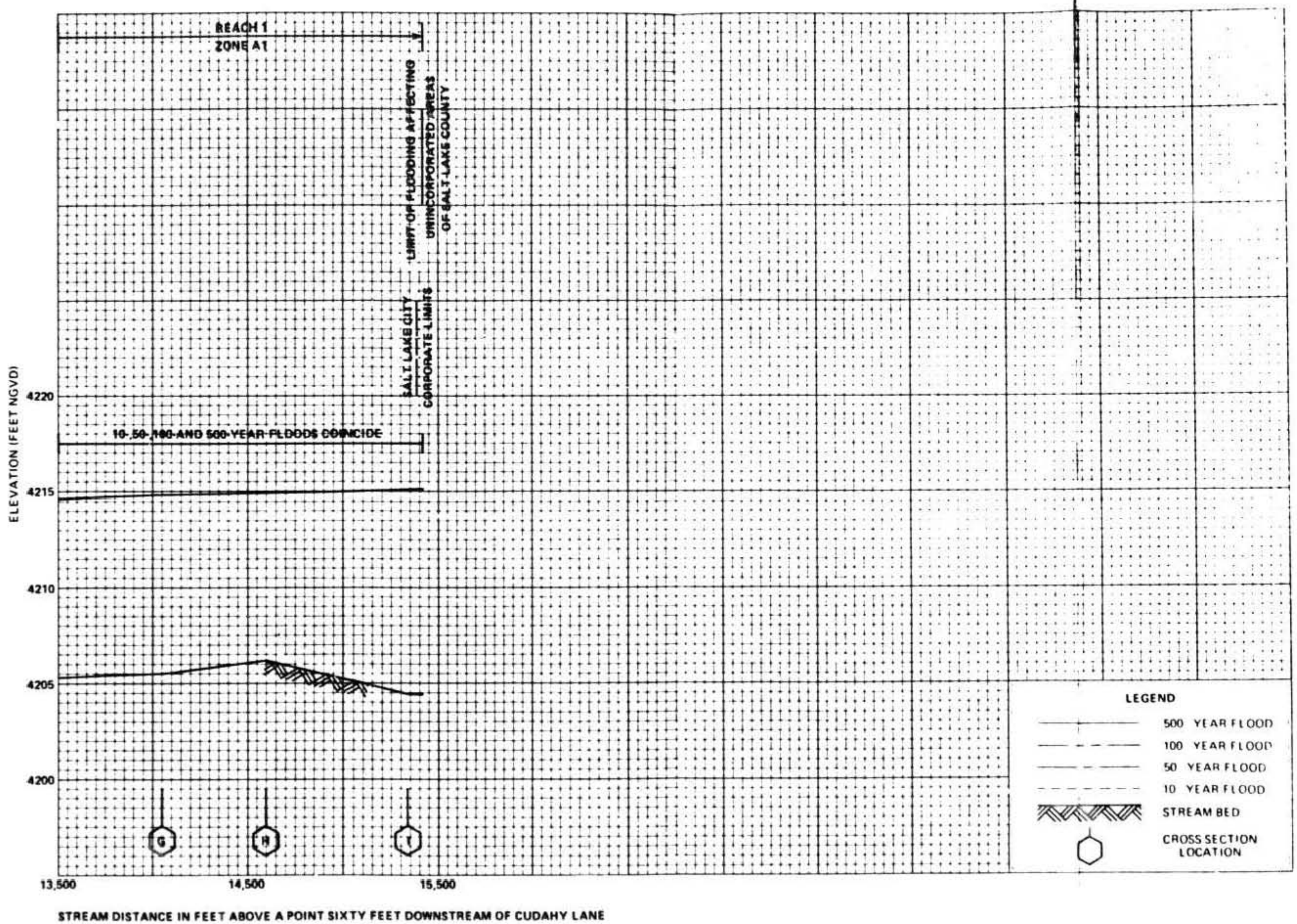
FLOOD PROFILES

JORDAN RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

02P



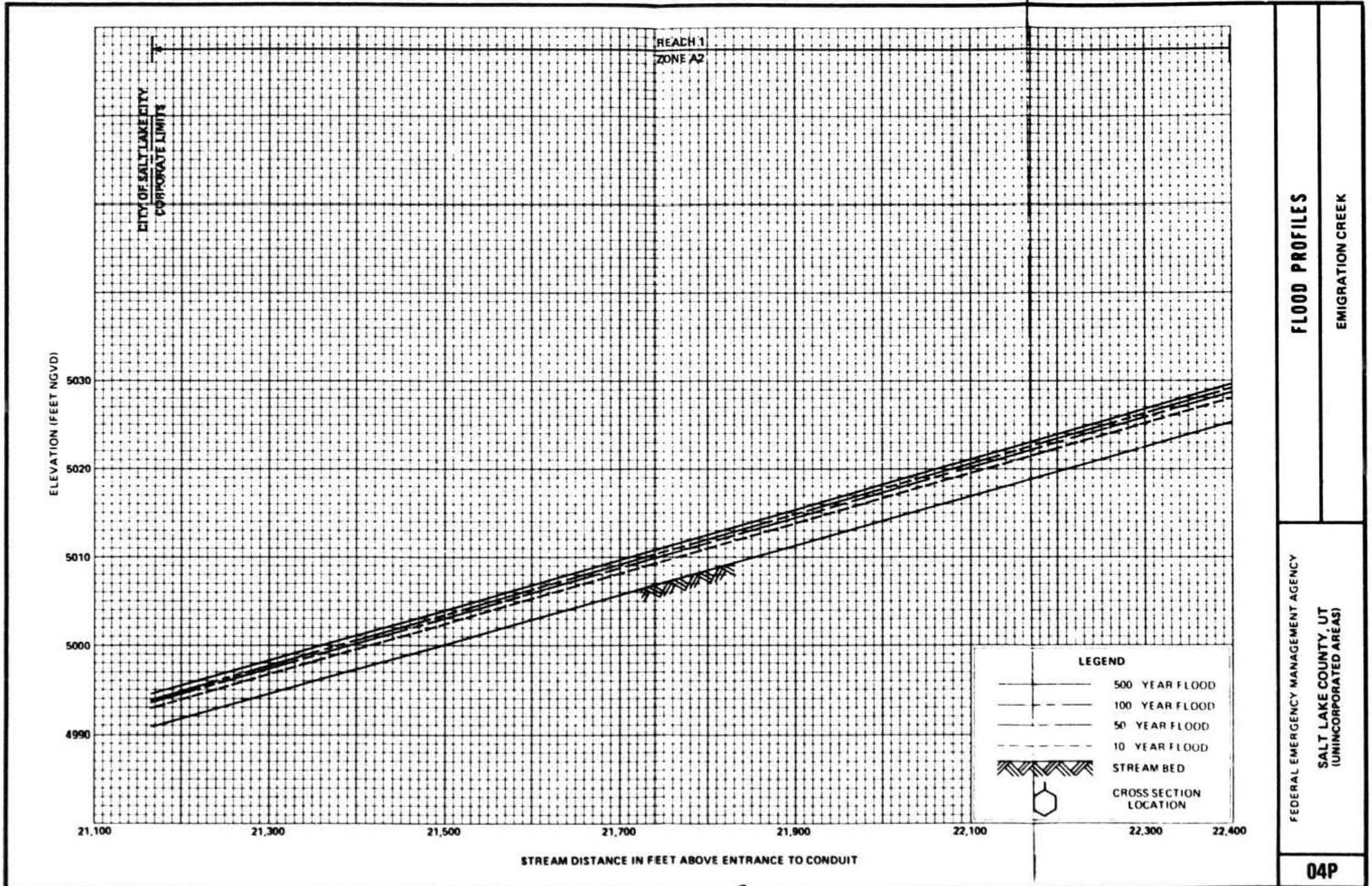
FLOOD PROFILES

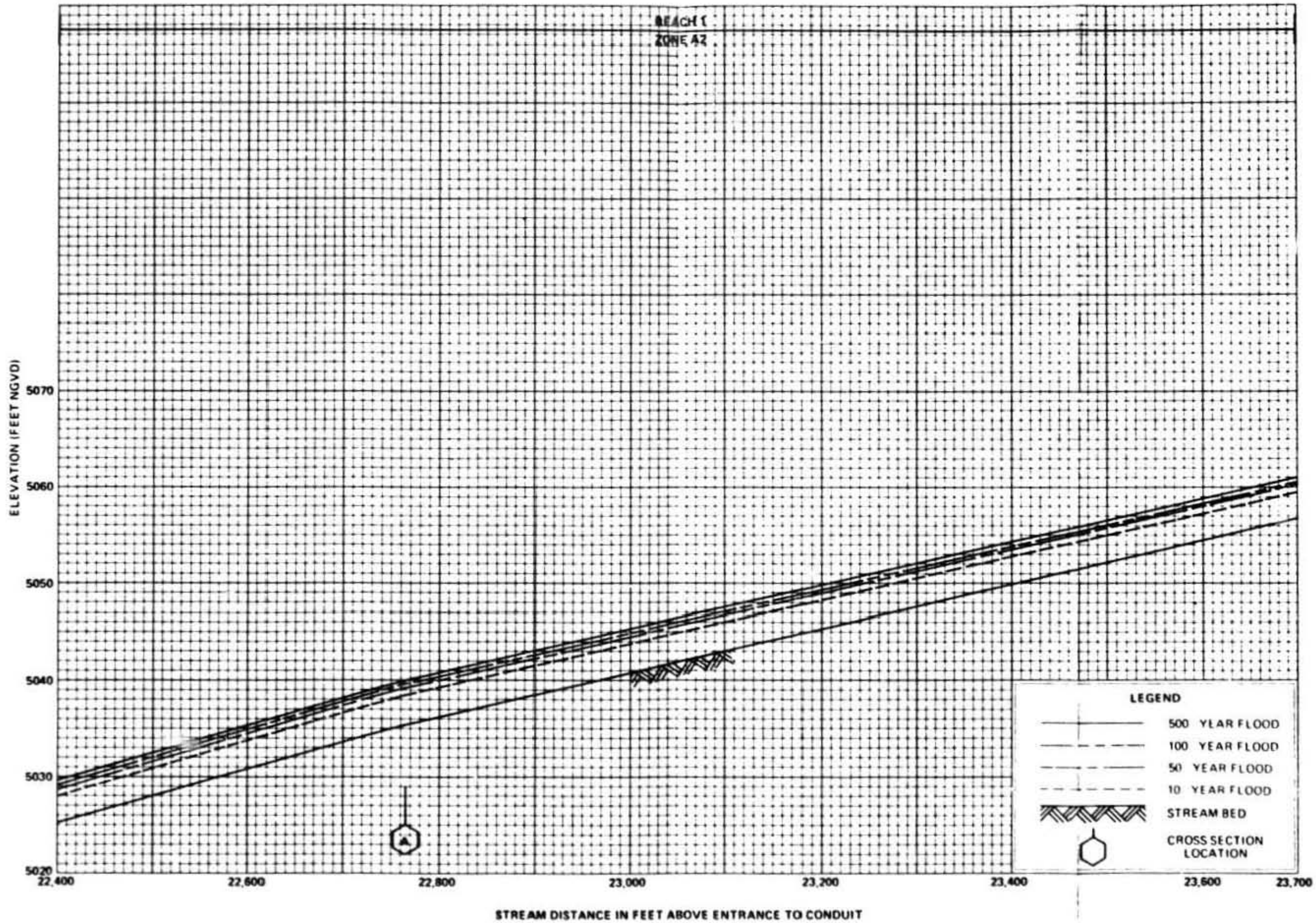
JORDAN RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

03P


REACH 1
ZONE A2
CITY OF SALT LAKE CITY
CORPORATE LIMITS
ELEVATION (FEET NGVD)
5030
5020
5010
5000
4990
21,100
21,300
21,500
21,700
21,900
22,100
22,300
22,400
STREAM DISTANCE IN FEET ABOVE ENTRANCE TO CONDUIT
LEGEND
500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION
FLOOD PROFILES
EMIGRATION CREEK
FEDERAL EMERGENCY MANAGEMENT AGENCY
SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)
04P



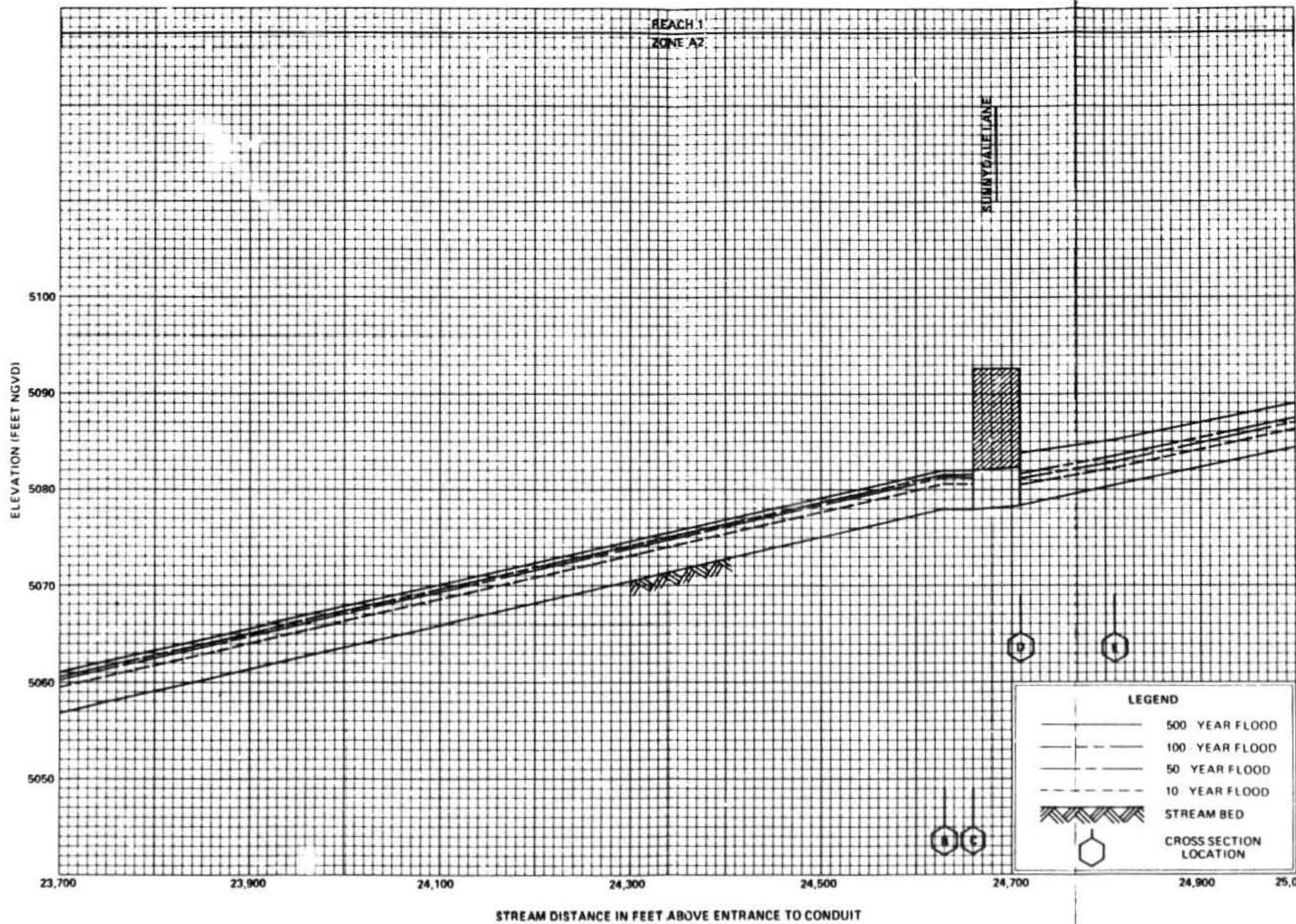
FLOOD PROFILES

EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

05P



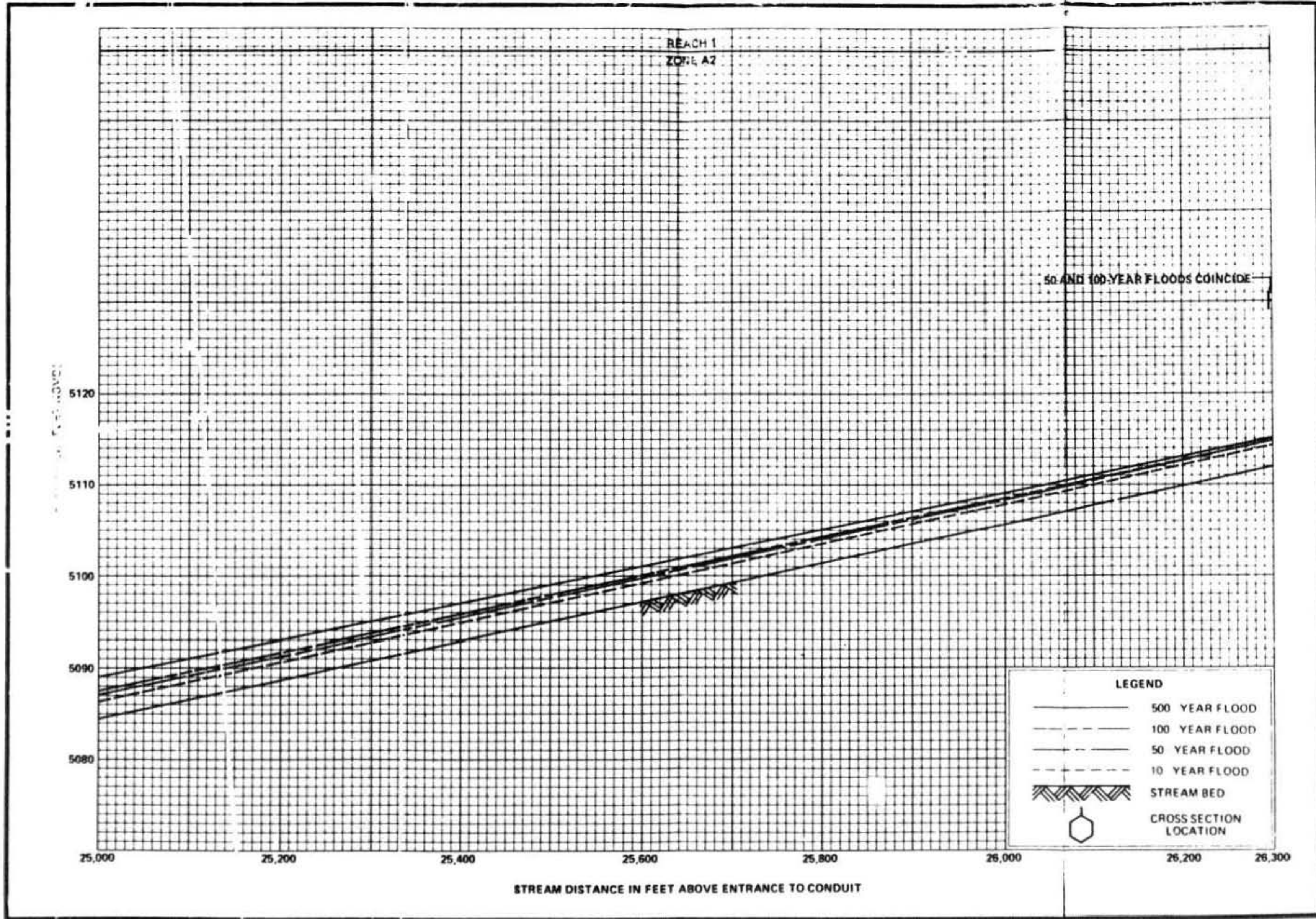
FLOOD PROFILES

EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

06P



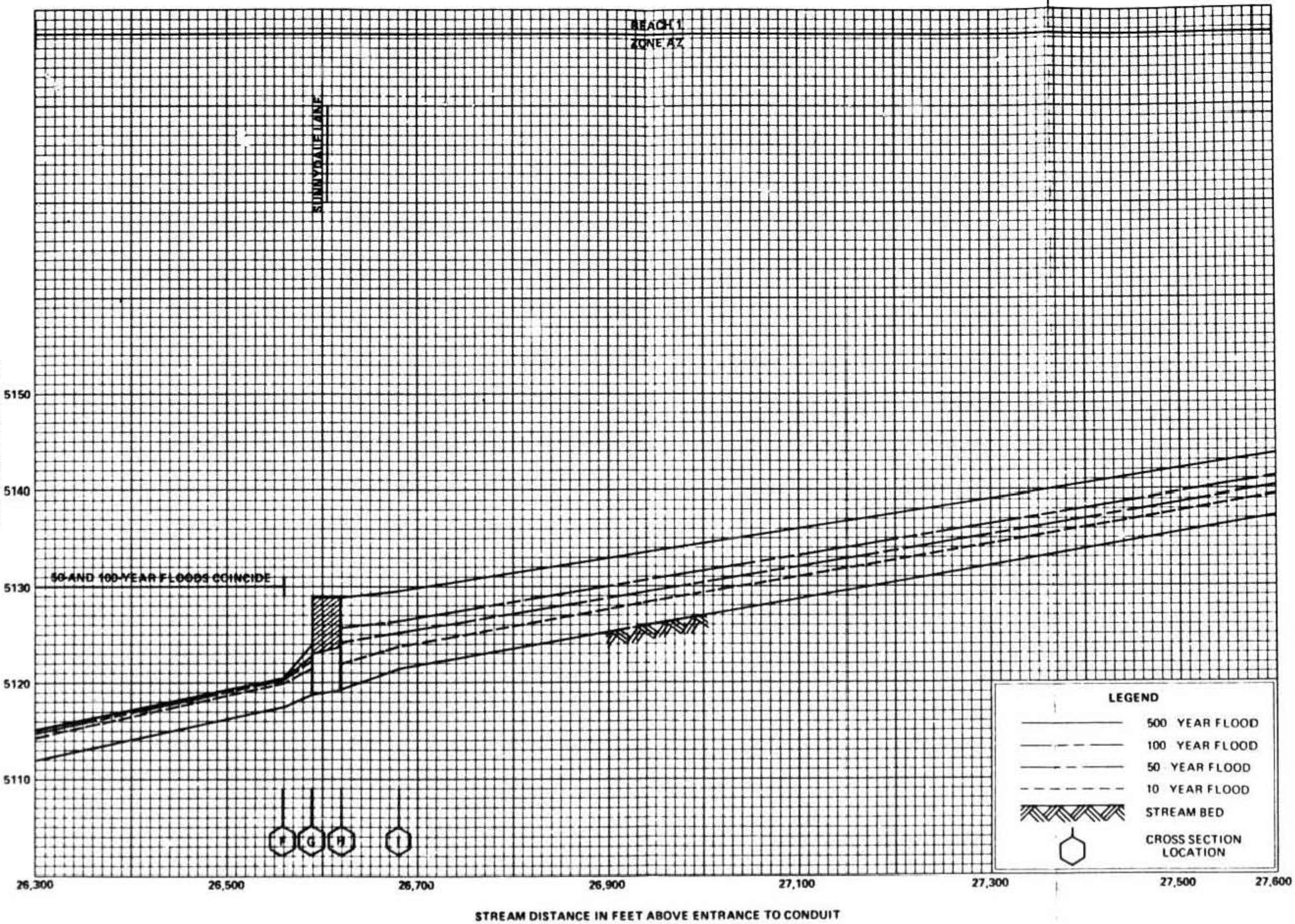
FLOOD PROFILES

EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

07P



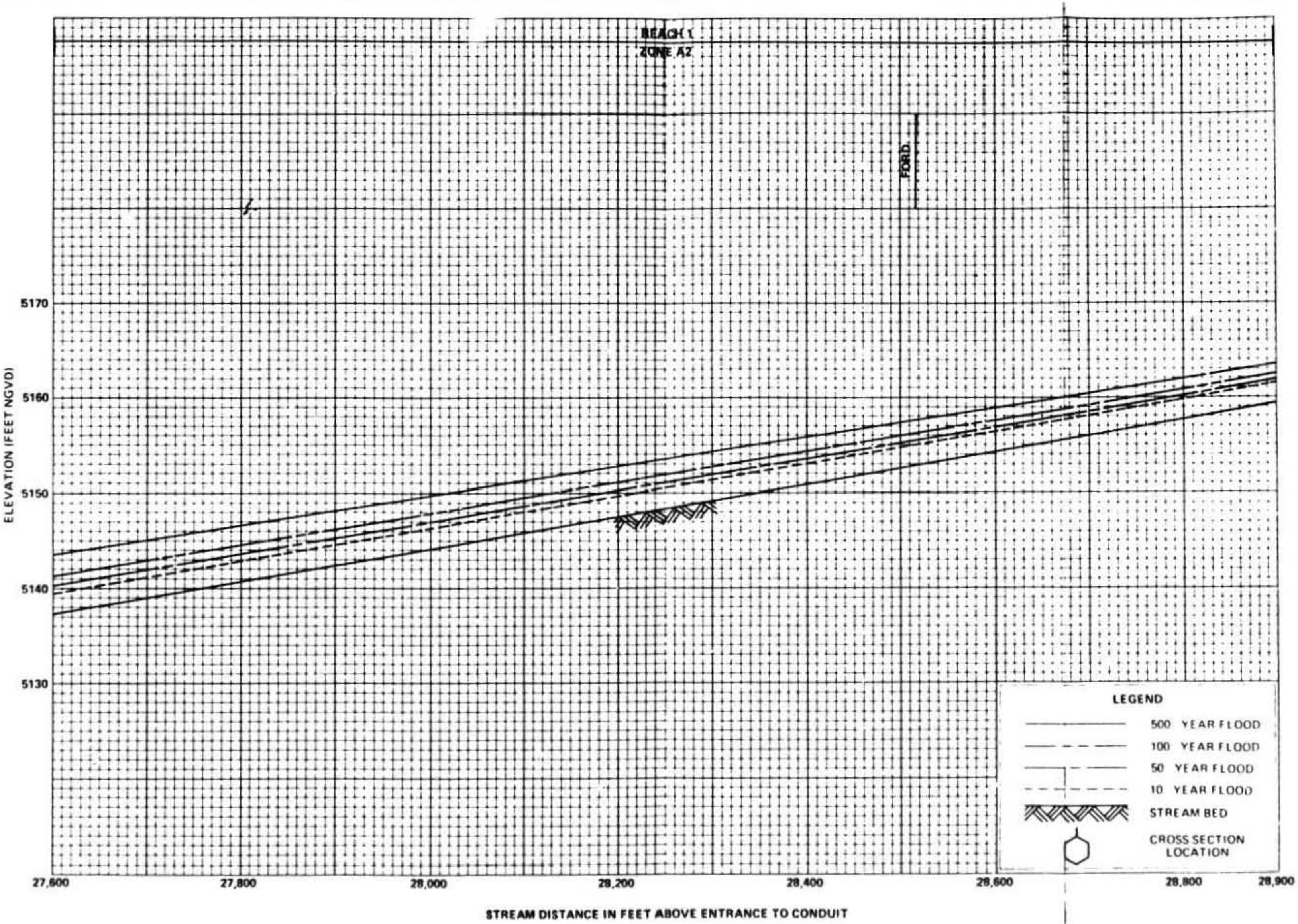
FLOOD PROFILES

EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

08P



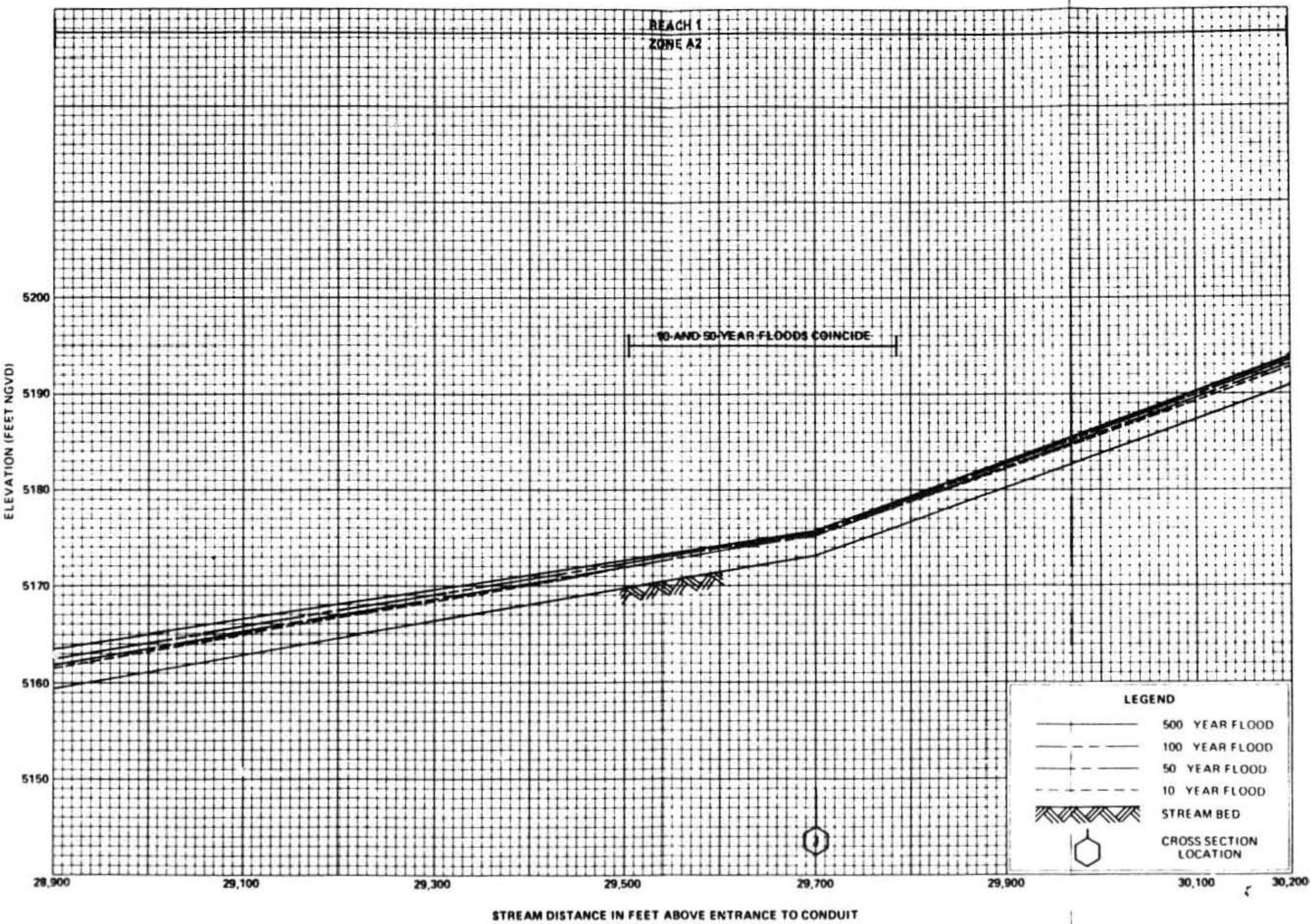
FLOOD PROFILES

EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

09P



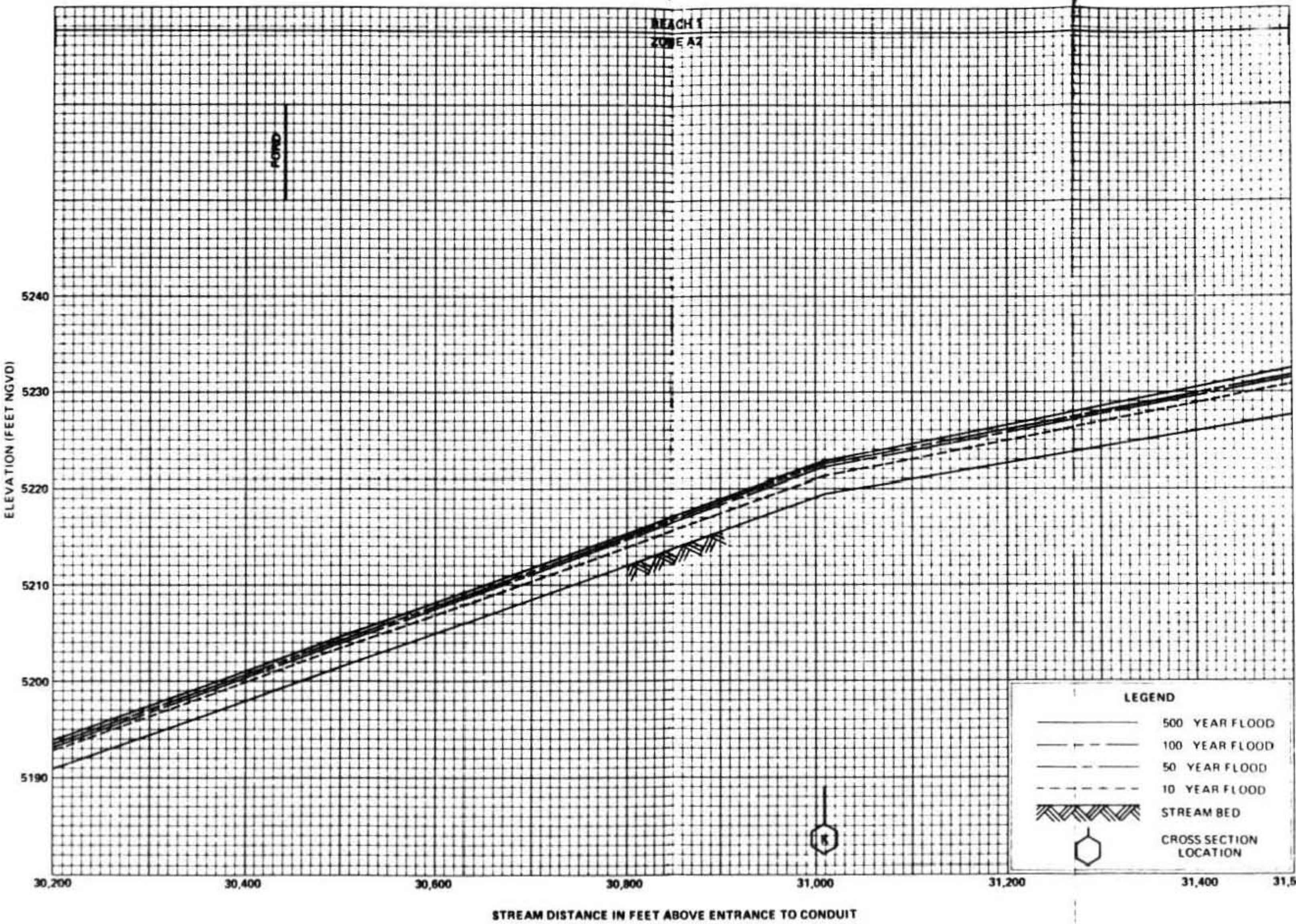
FLOOD PROFILES

EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

10P



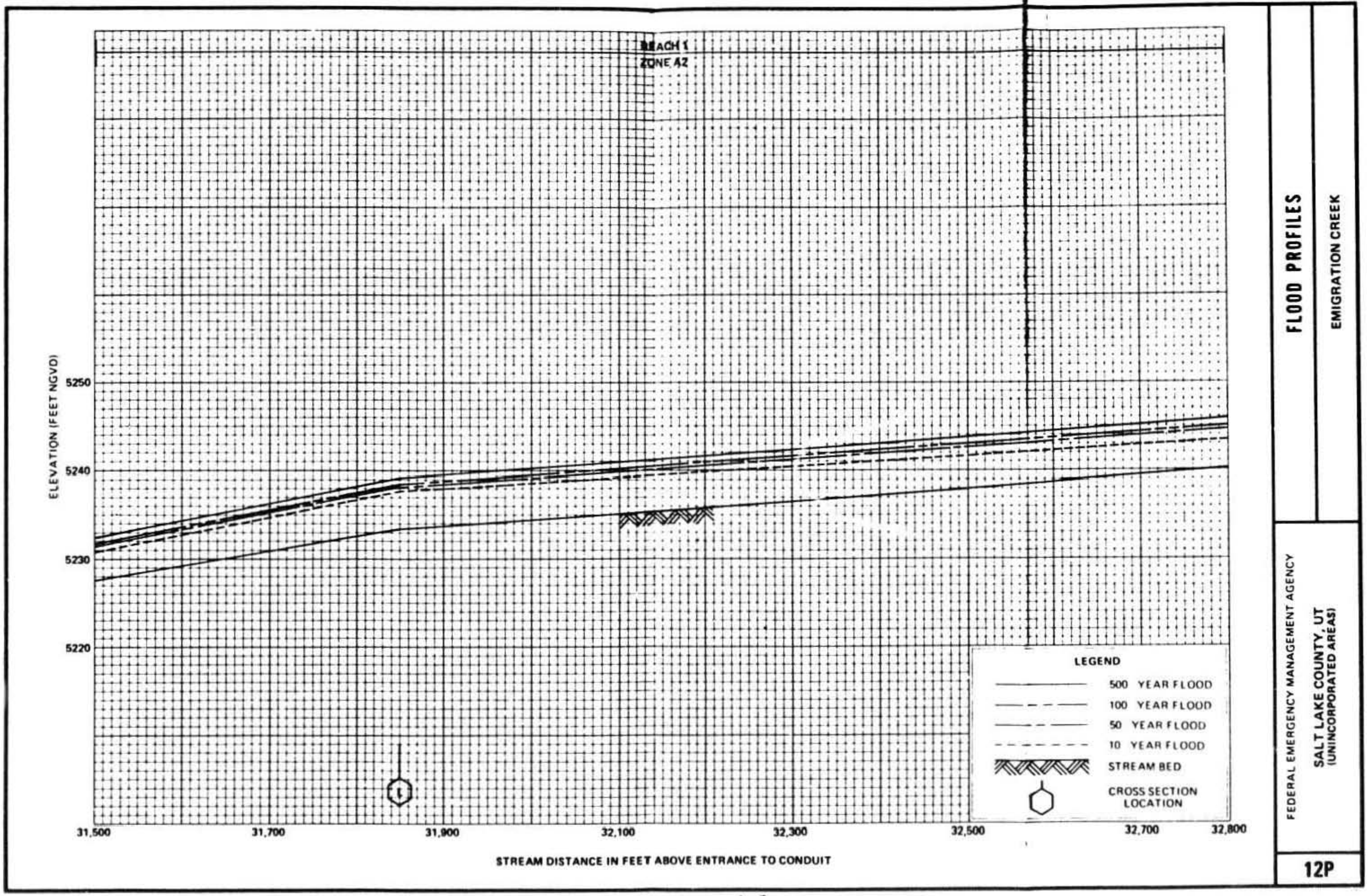
FLOOD PROFILES

EMIGRATION CREEK

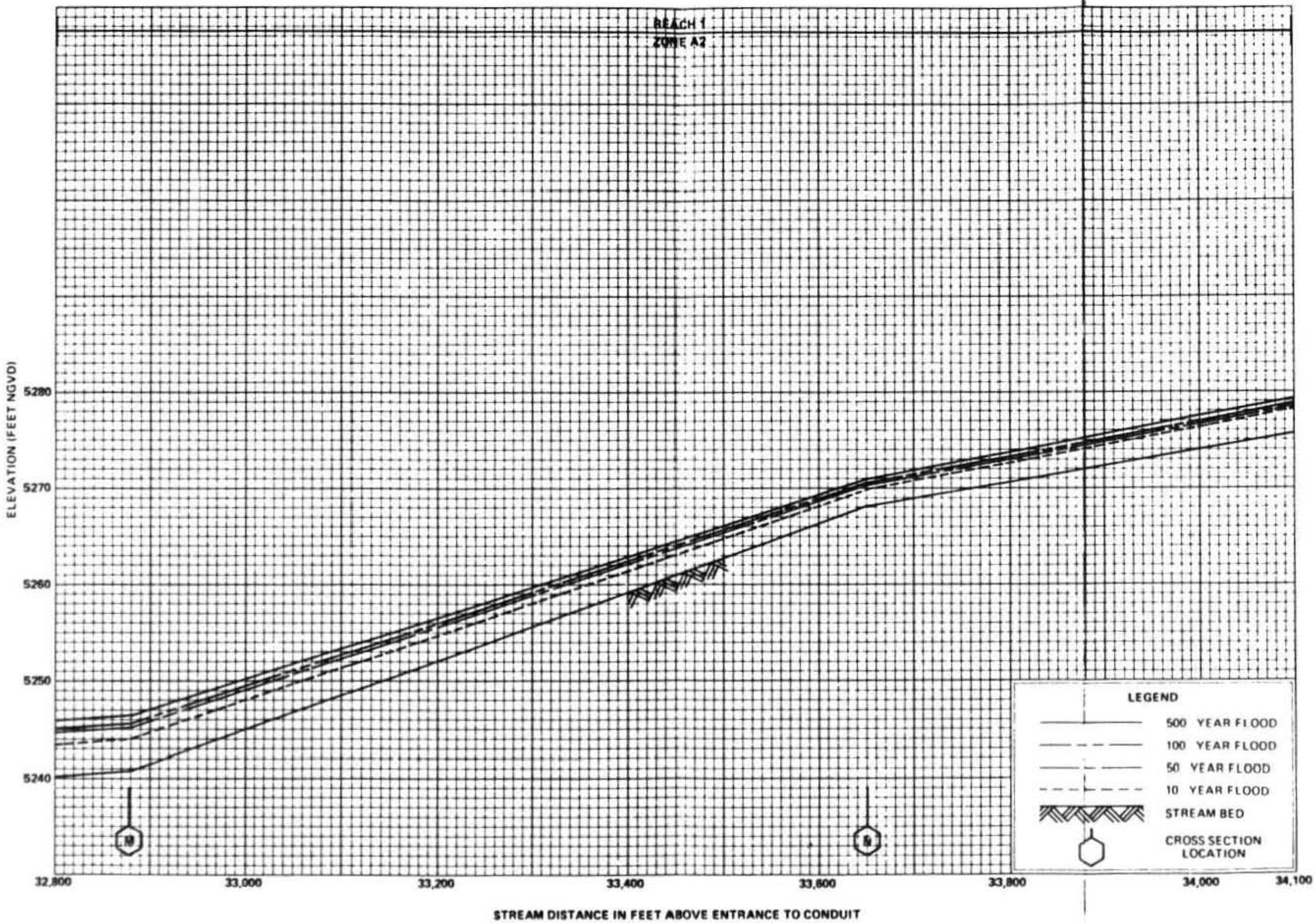
FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

11P



REACH 1
ZONE A2
ELEVATION (FEET NGVD)
5250
5240
5230
5220
31,500
31,700
31,900
32,100
32,300
32,500
32,700
32,800
STREAM DISTANCE IN FEET ABOVE ENTRANCE TO CONDUIT
LEGEND
500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION
FLOOD PROFILES
EMIGRATION CREEK
FEDERAL EMERGENCY MANAGEMENT AGENCY
SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)
12P



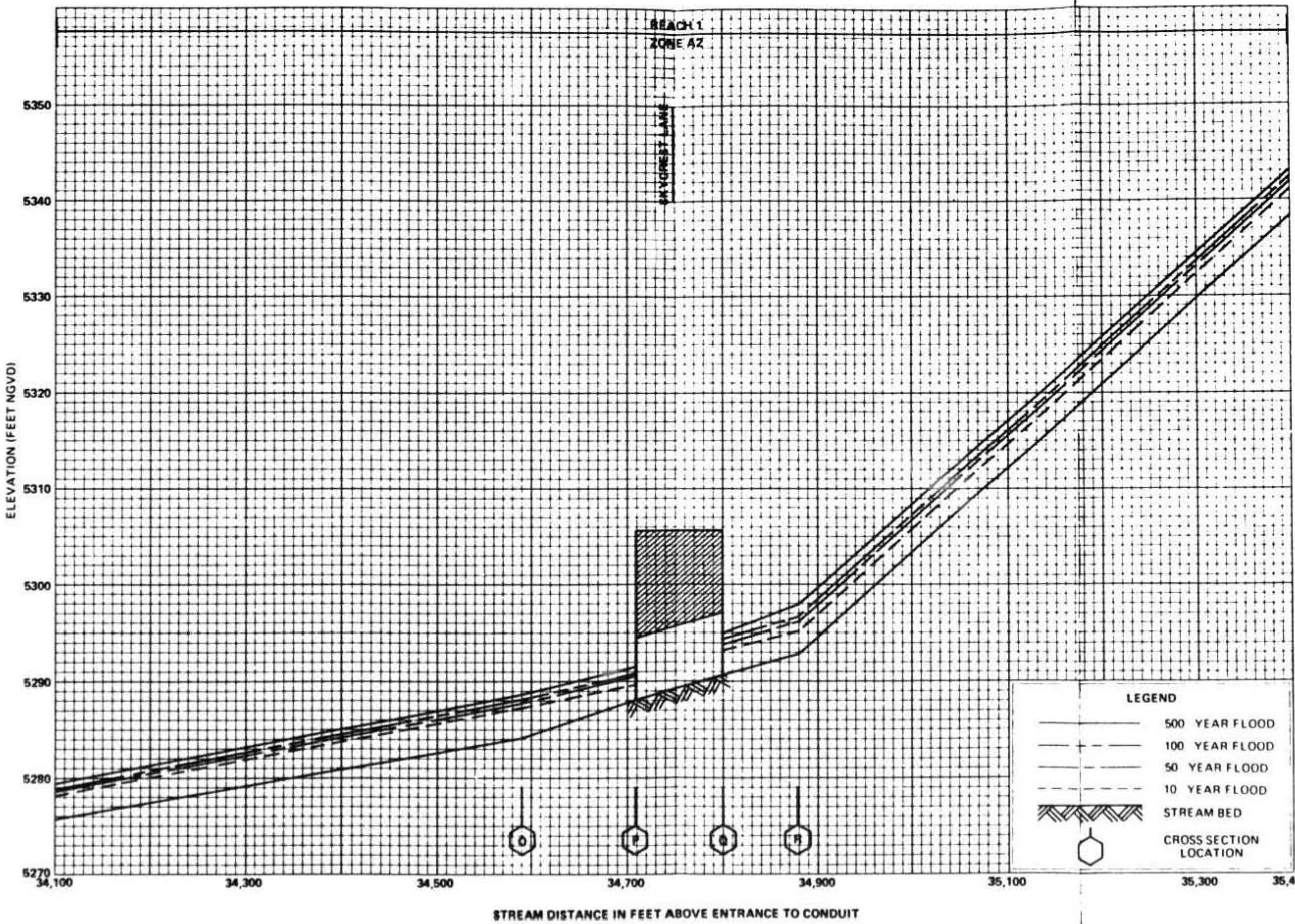
FLOOD PROFILES

EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

13P



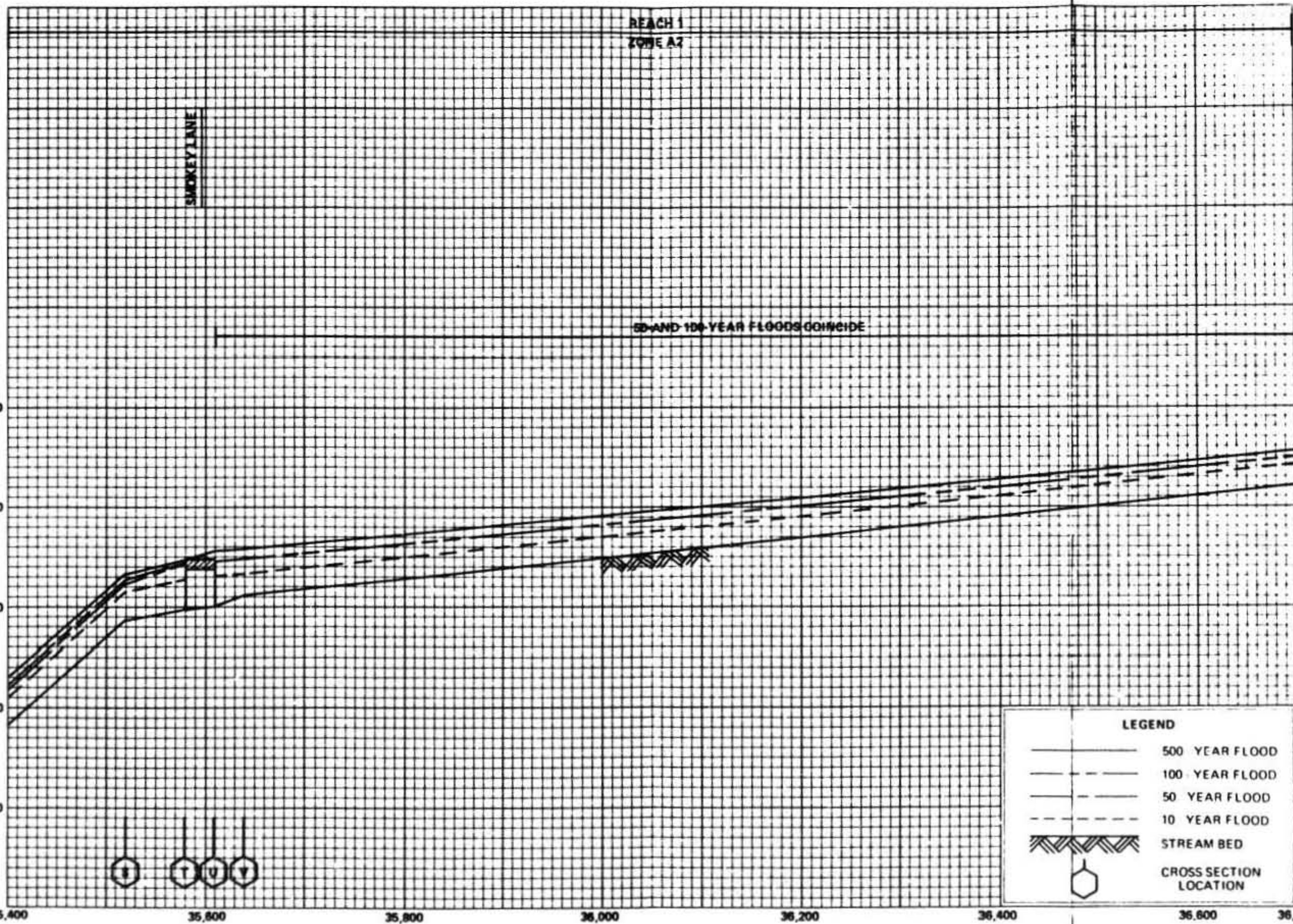
FLOOD PROFILES

EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

14P



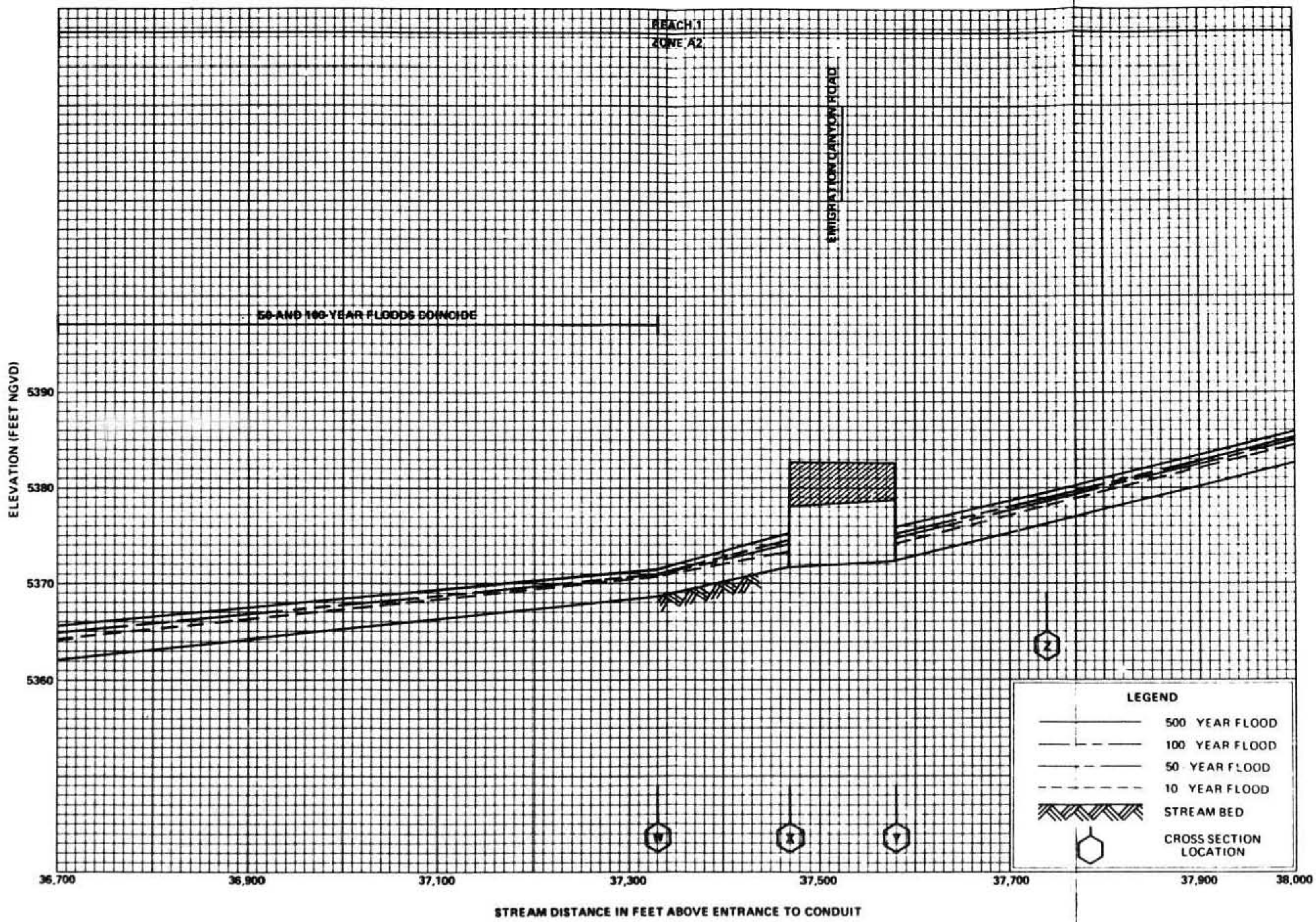
FLOOD PROFILES

EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT (UNINCORPORATED AREAS)

15P



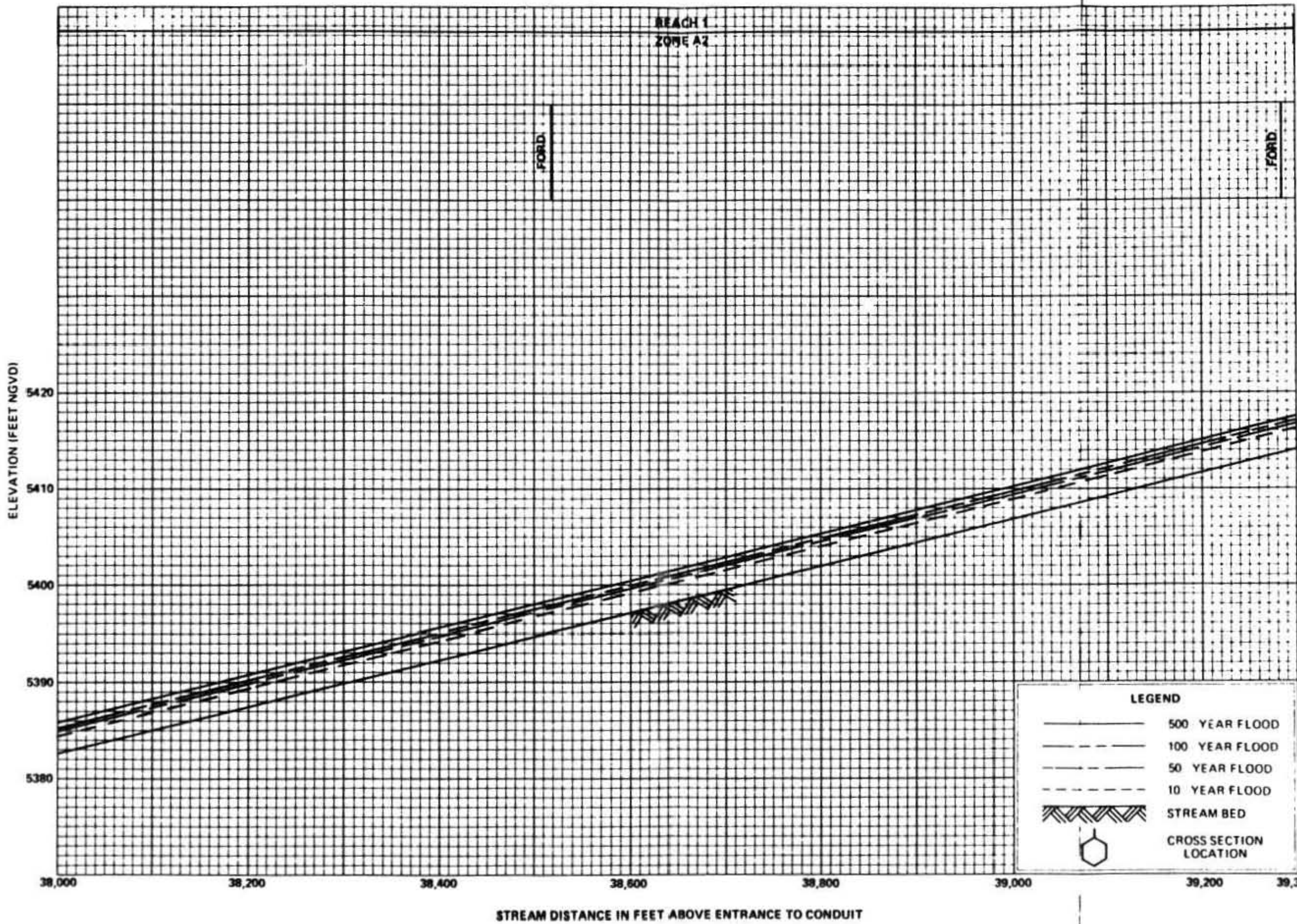
FLOOD PROFILES

EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

16P



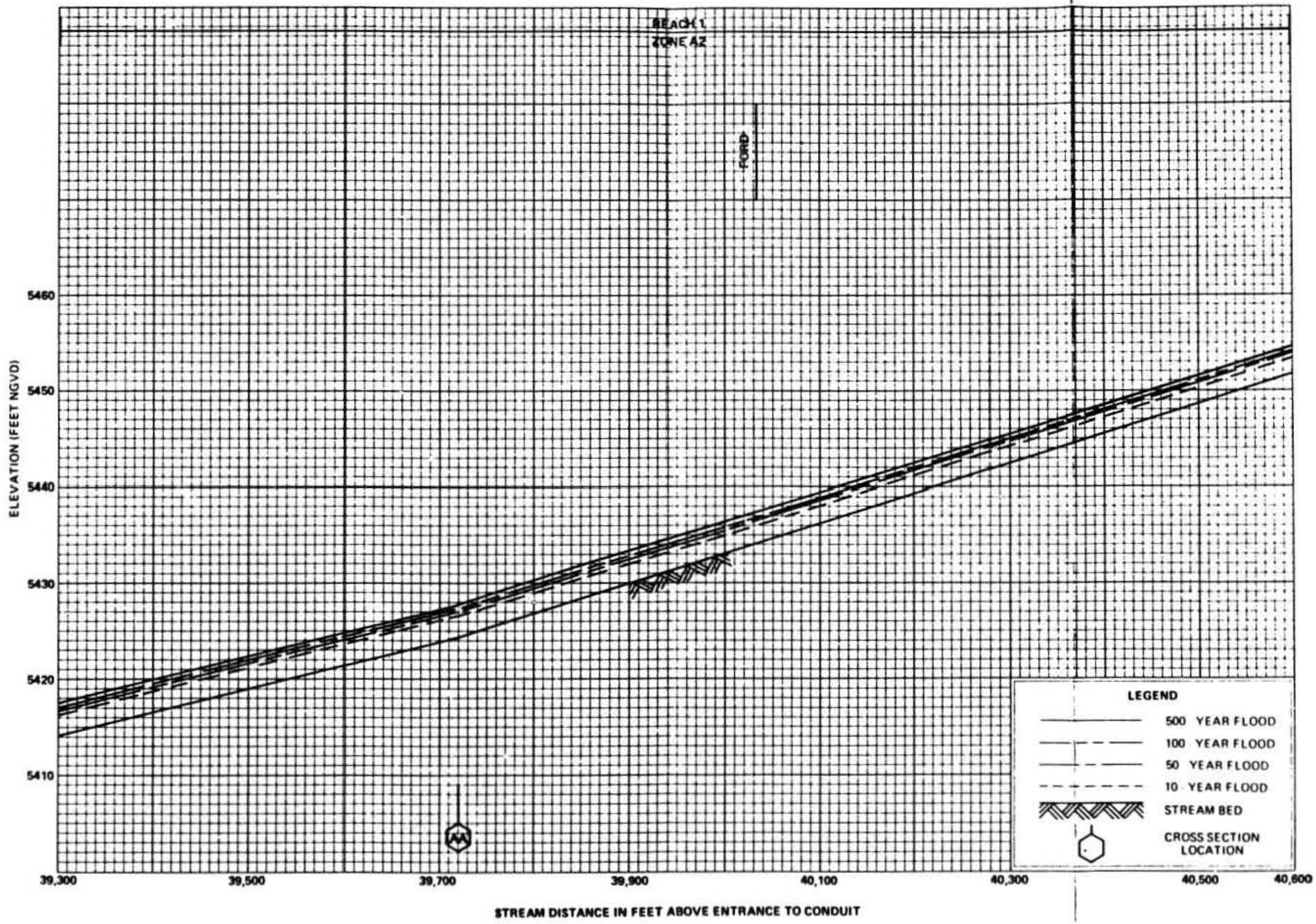
FLOOD PROFILES

EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

17P



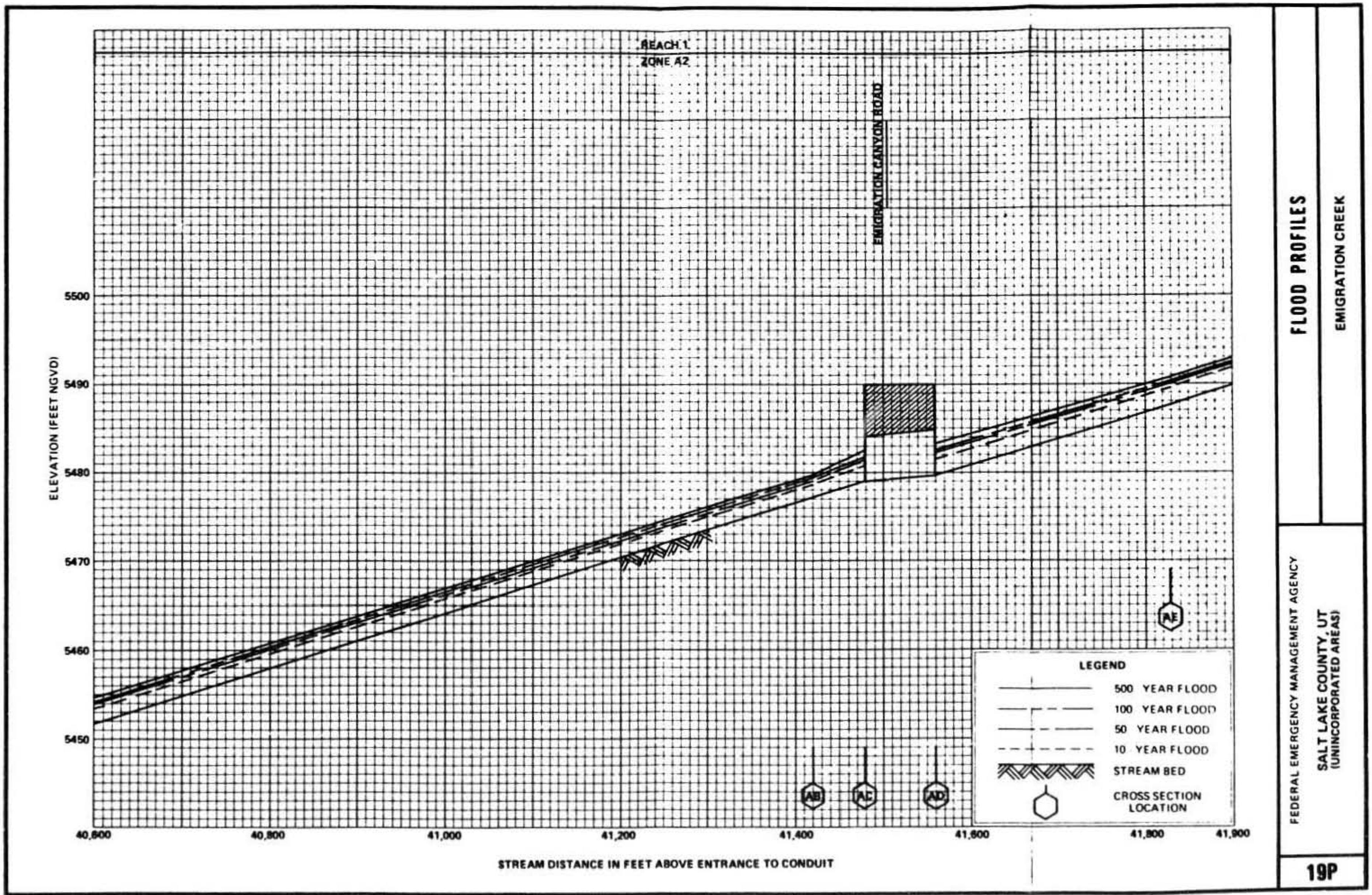
FLOOD PROFILES

EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

18P



REACH 1
ZONE A2
EMIGRATION CANYON ROAD
5500
5490
5480
5470
5460
5450
ELEVATION (FEET NGVD)
40,600
40,800
41,000
41,200
41,400
41,600
41,800
41,900
STREAM DISTANCE IN FEET ABOVE ENTRANCE TO CONDUIT
AB
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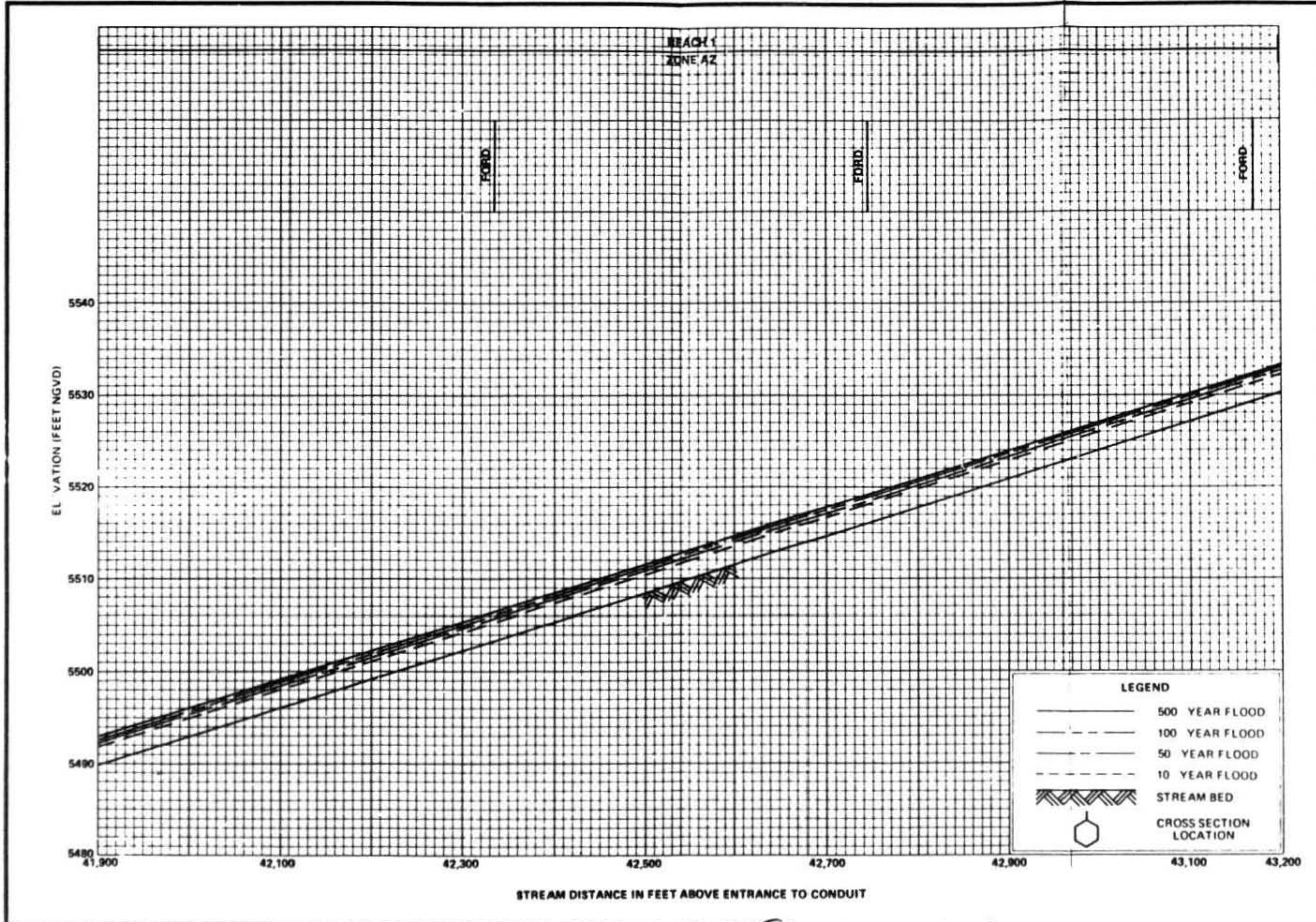
LEGEND
500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION
FLOOD PROFILES
EMIGRATION CREEK
FEDERAL EMERGENCY MANAGEMENT AGENCY
SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)
19P



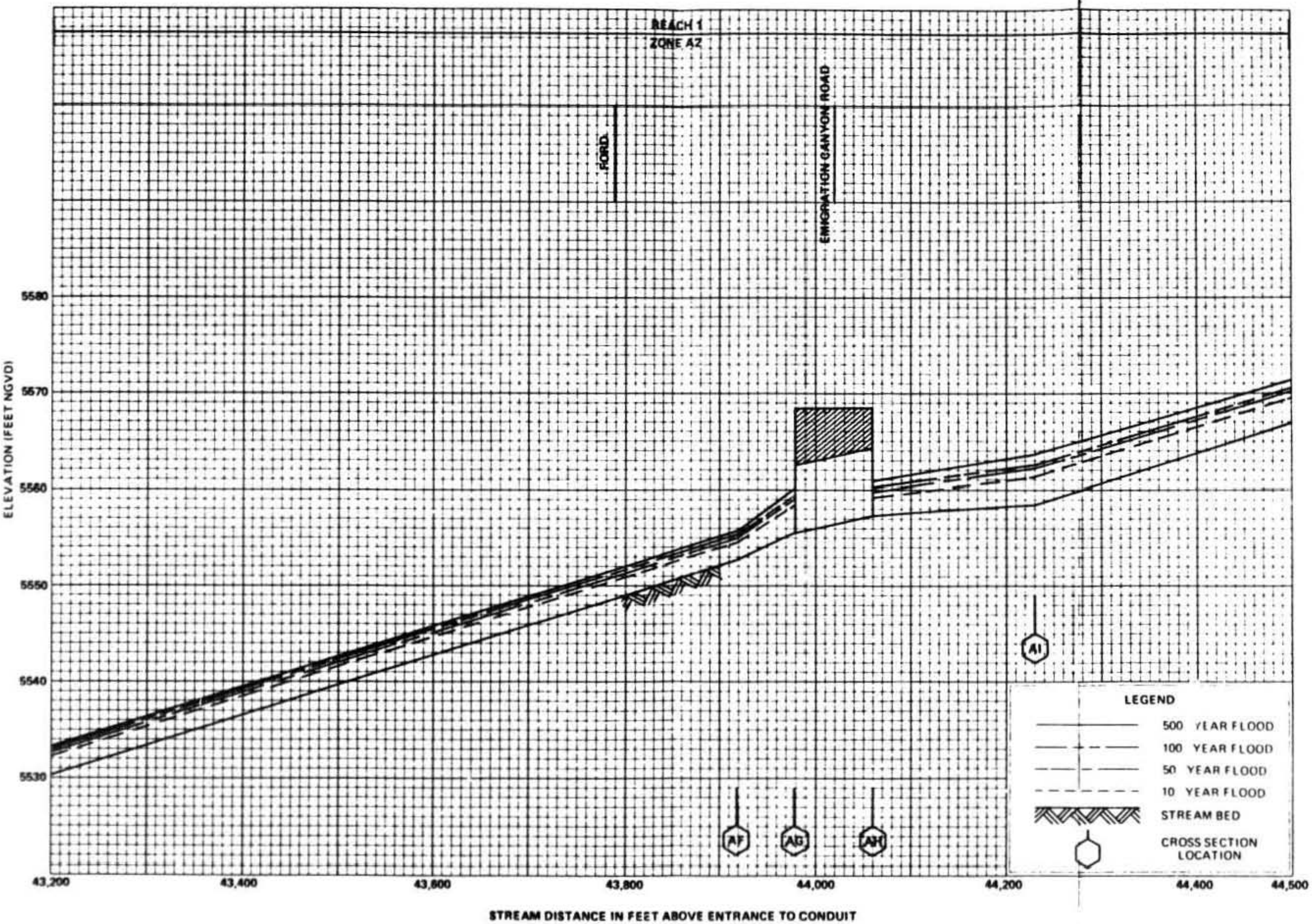
FLOOD PROFILES

EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

20P



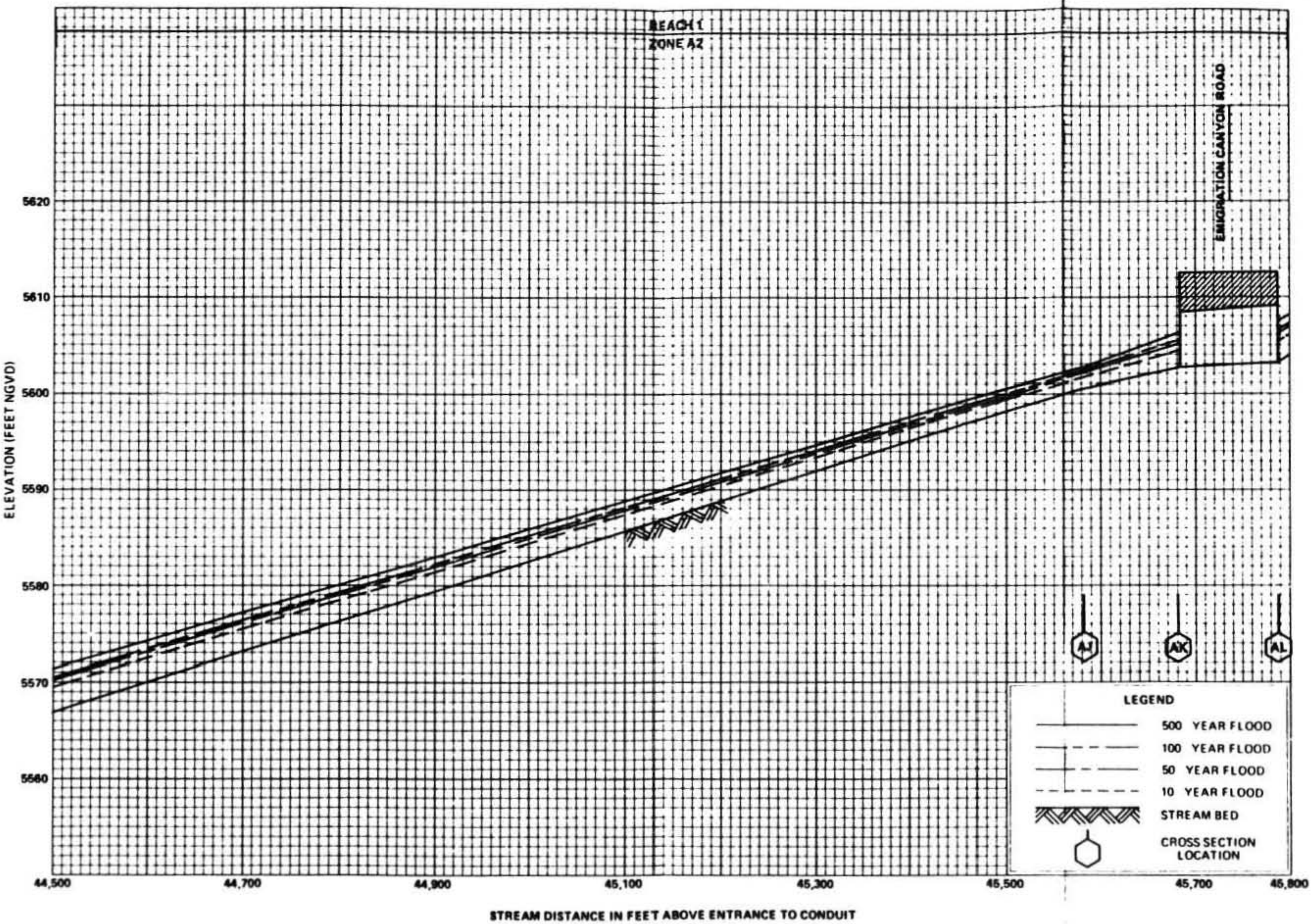
FLOOD PROFILES

EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

21P



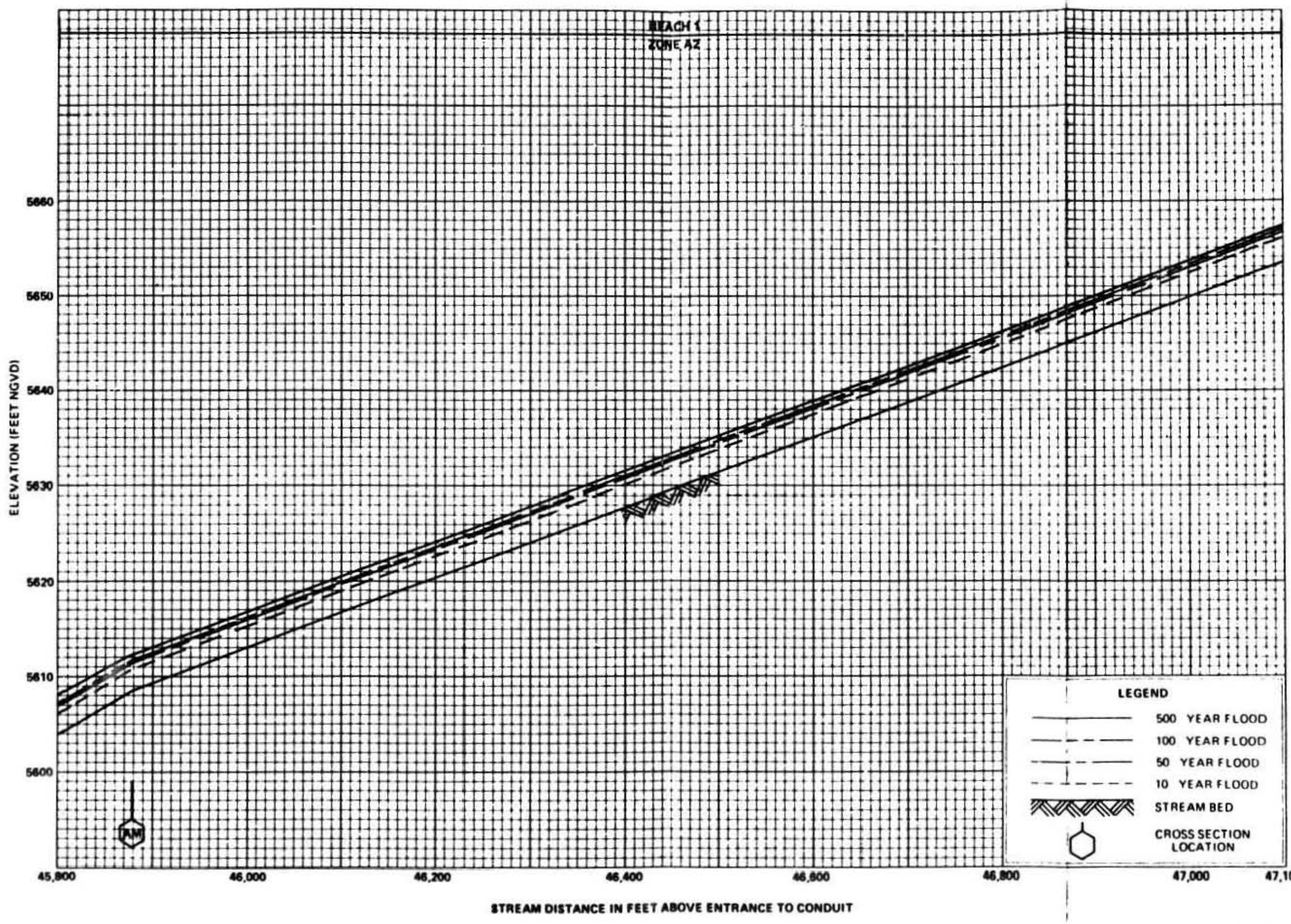
FLOOD PROFILES

EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

22P



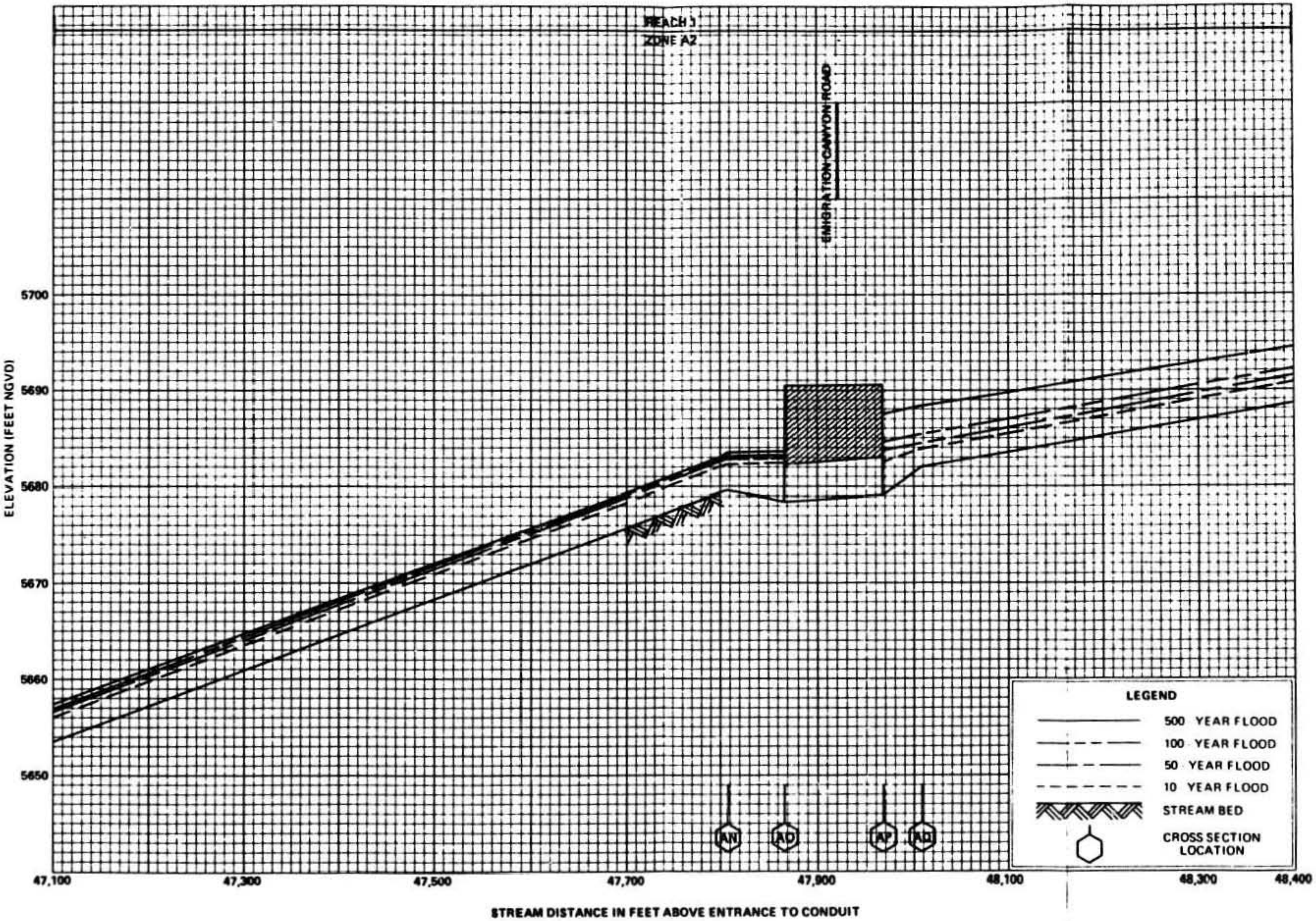
FLOOD PROFILES

EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

23P



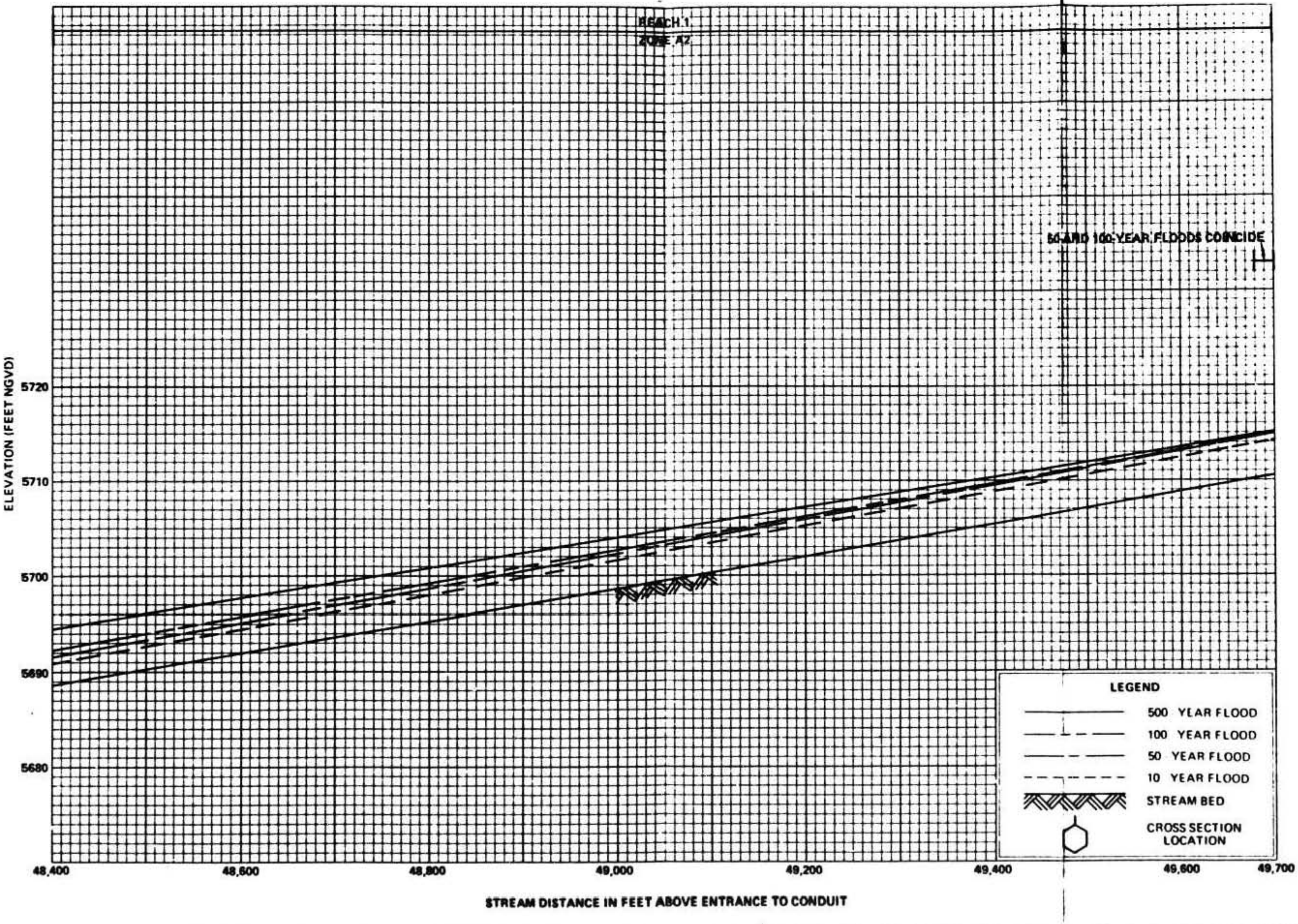
FLOOD PROFILES

EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

24P



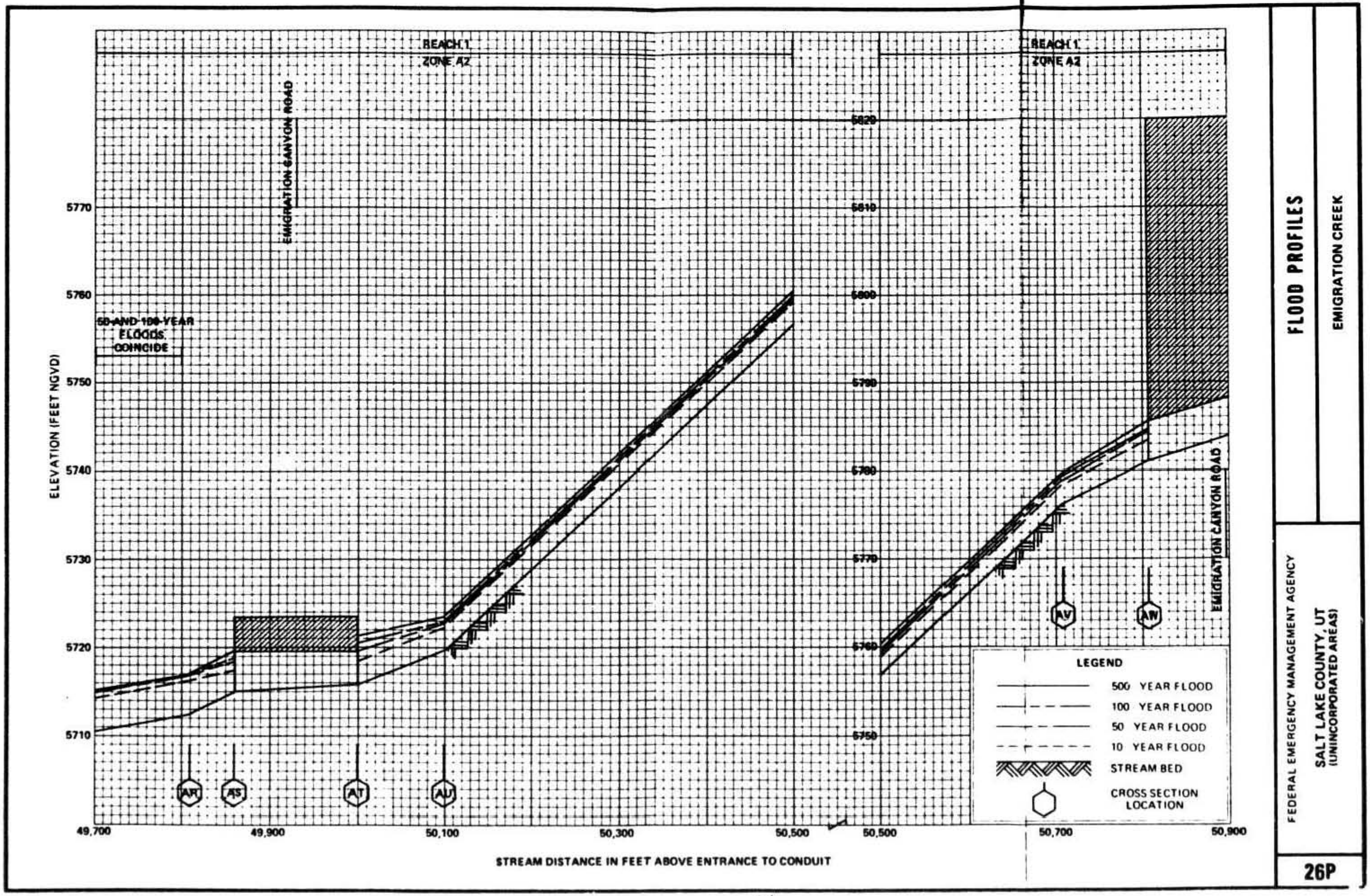
FLOOD PROFILES

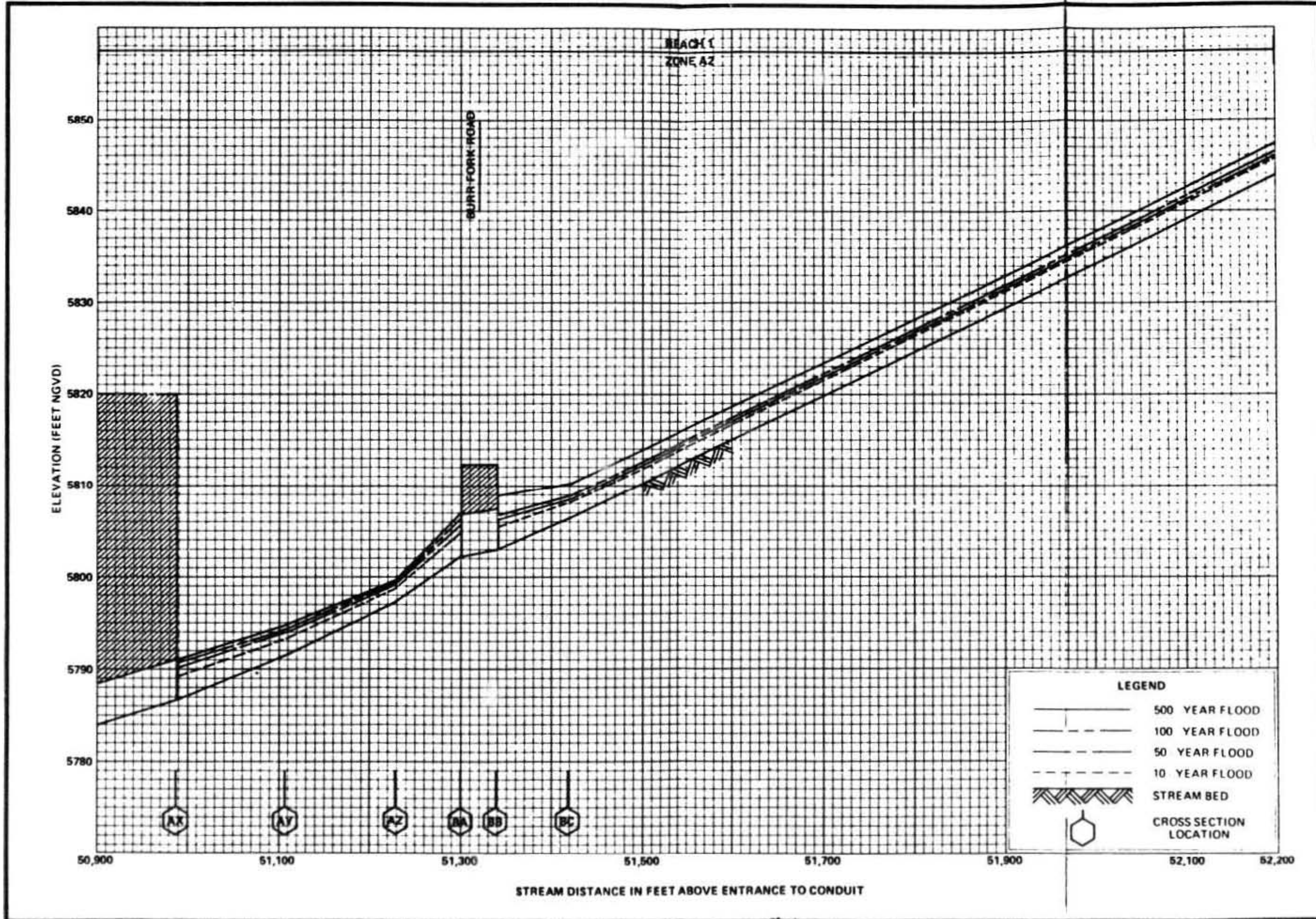
EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

25P


REACH 1
ZONE A2
EMIGRATION CANYON ROAD
50 AND 100-YEAR FLOODS COINCIDE
ELEVATION (FEET NGVD)
5770
5760
5750
5740
5730
5720
5710
5820
5810
5800
5790
5780
5770
5760
5750
AR
AS
AT
AU
AV
AW
49,700
49,900
50,100
50,300
50,500
50,500
50,700
50,900
STREAM DISTANCE IN FEET ABOVE ENTRANCE TO CONDUIT
LEGEND
500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION
FLOOD PROFILES
EMIGRATION CREEK
FEDERAL EMERGENCY MANAGEMENT AGENCY
SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)
26P



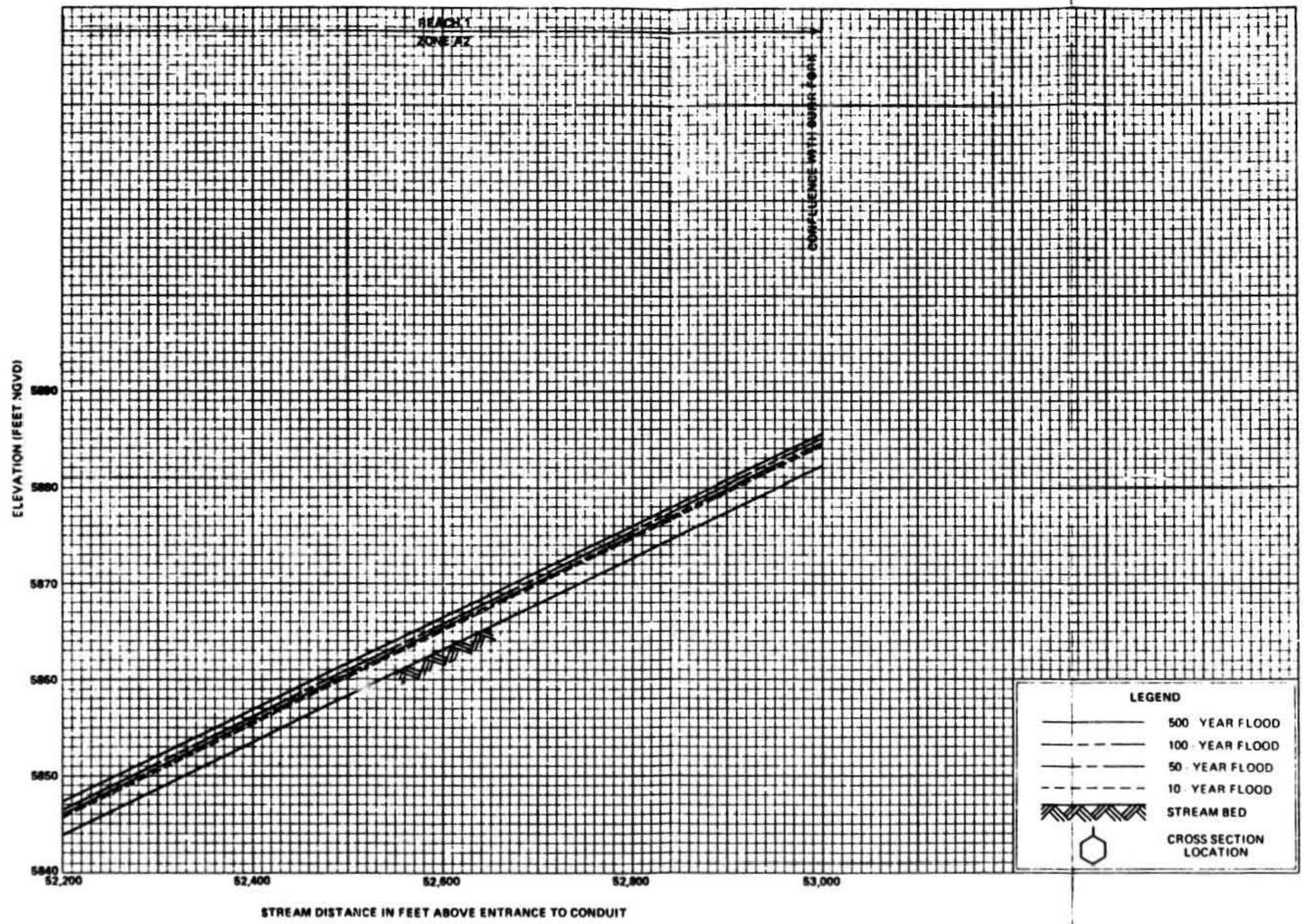
FLOOD PROFILES

EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

27P

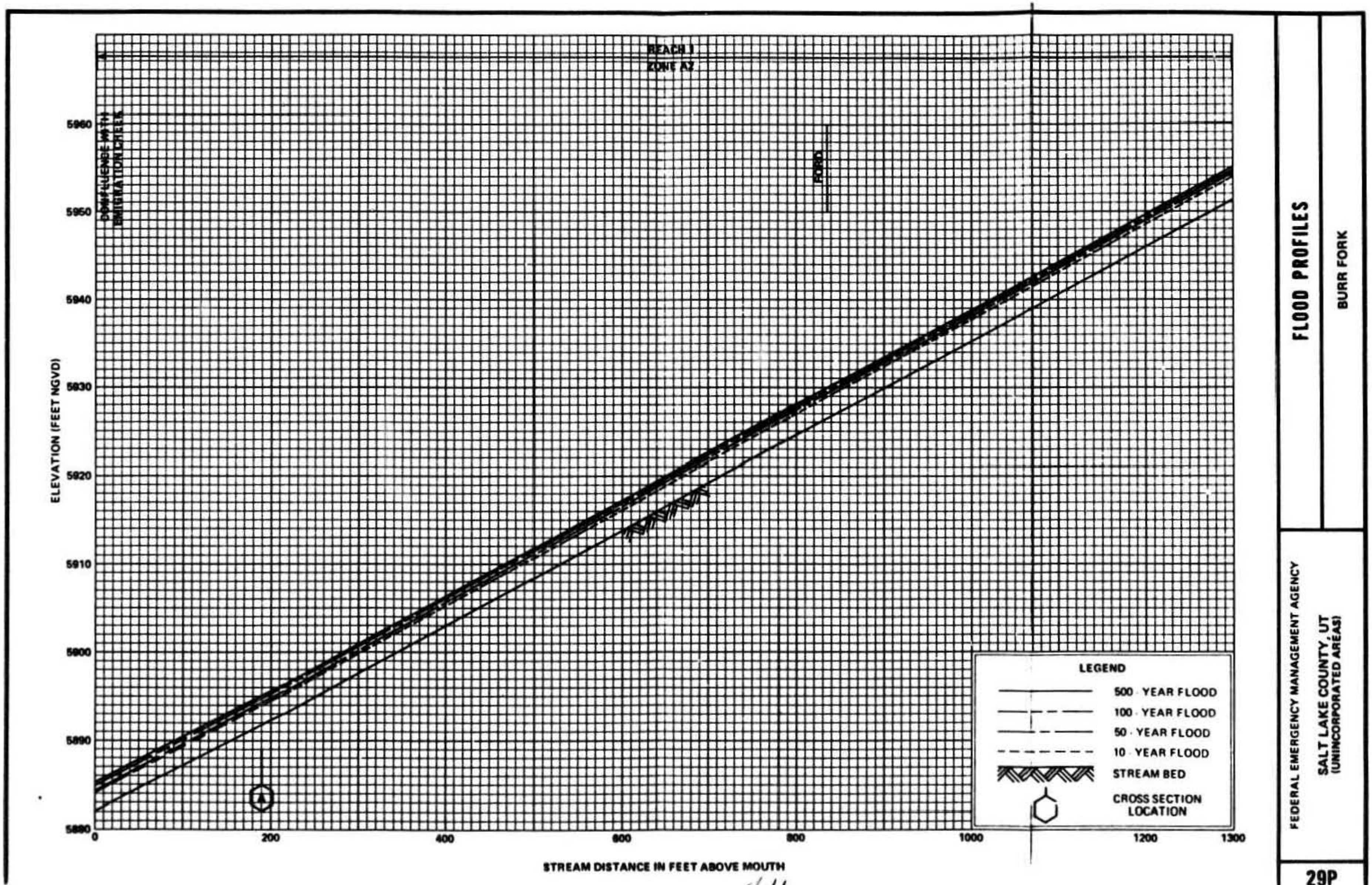


FLOOD PROFILES

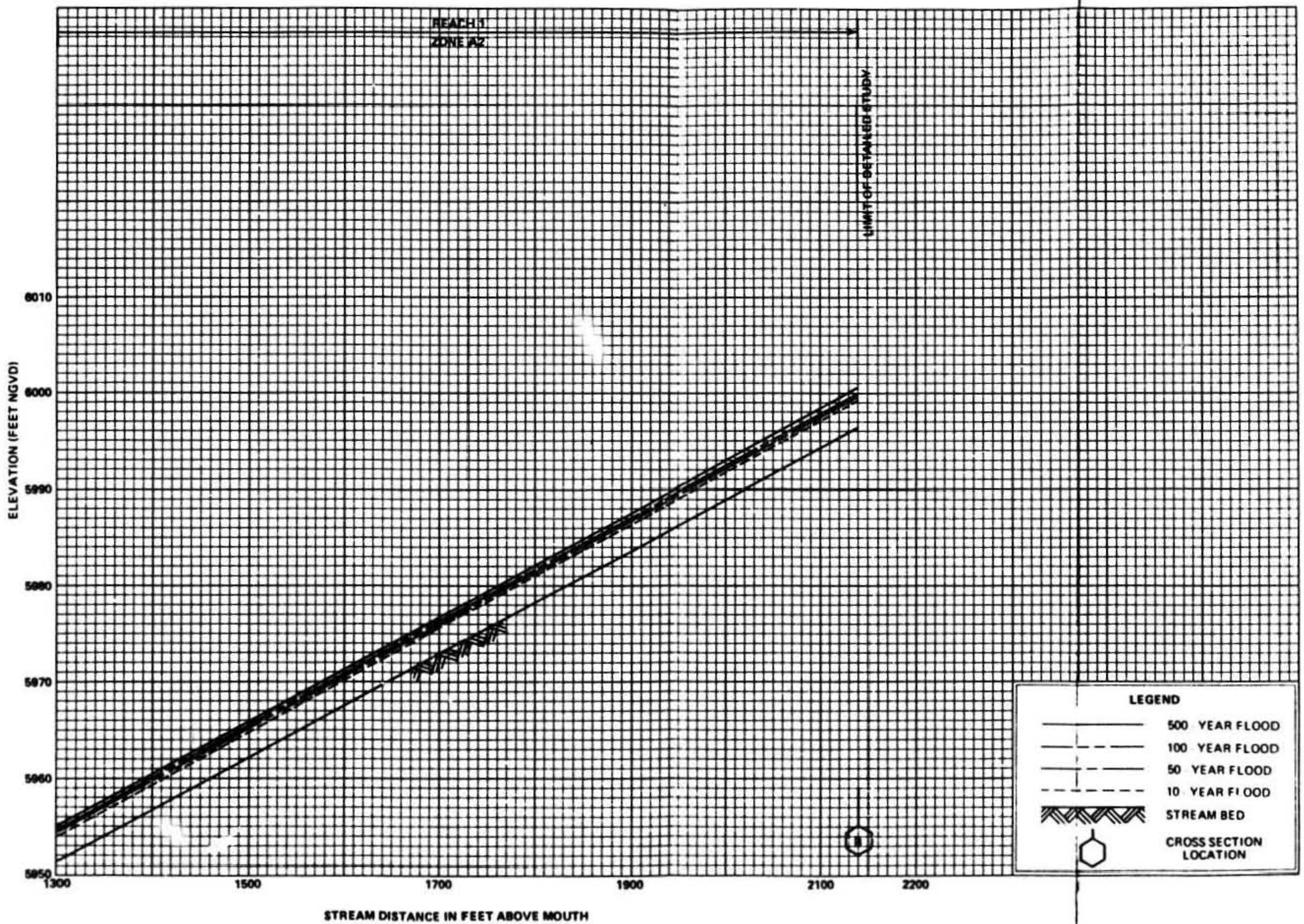
EMIGRATION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)


REACH 1
ZONE A2
CONFLUENCE WITH EMIGRATION CREEK
FORD
ELEVATION (FEET NGVD)
5880
5890
5900
5910
5920
5930
5940
5950
5960
0
200
400
600
800
1000
1200
1300
STREAM DISTANCE IN FEET ABOVE MOUTH
LEGEND
500 - YEAR FLOOD
100 - YEAR FLOOD
50 - YEAR FLOOD
10 - YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION
A
FLOOD PROFILES
BURR FORK
FEDERAL EMERGENCY MANAGEMENT AGENCY
SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)
29P

84



FLOOD PROFILES

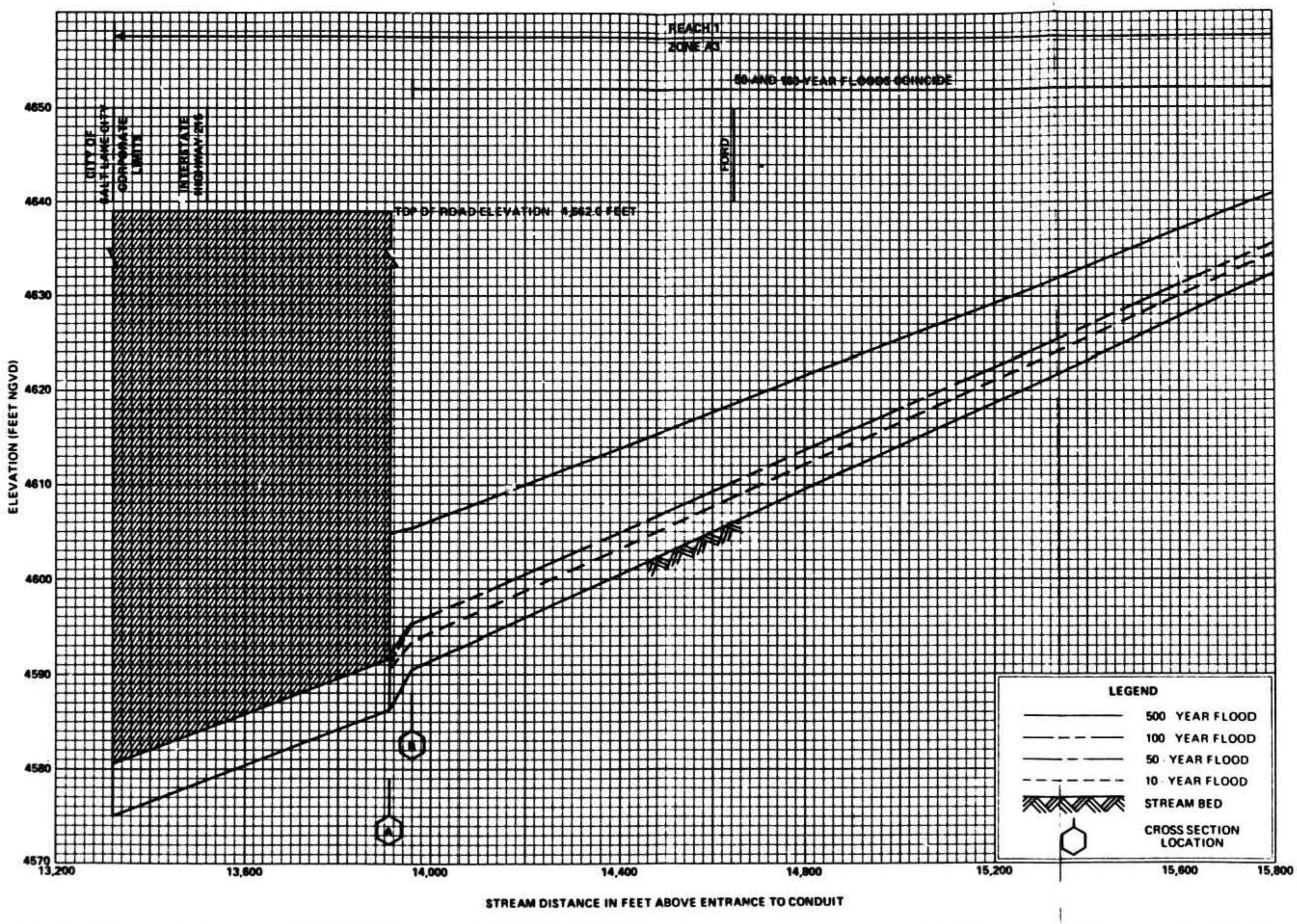
BURR FORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

30P

85



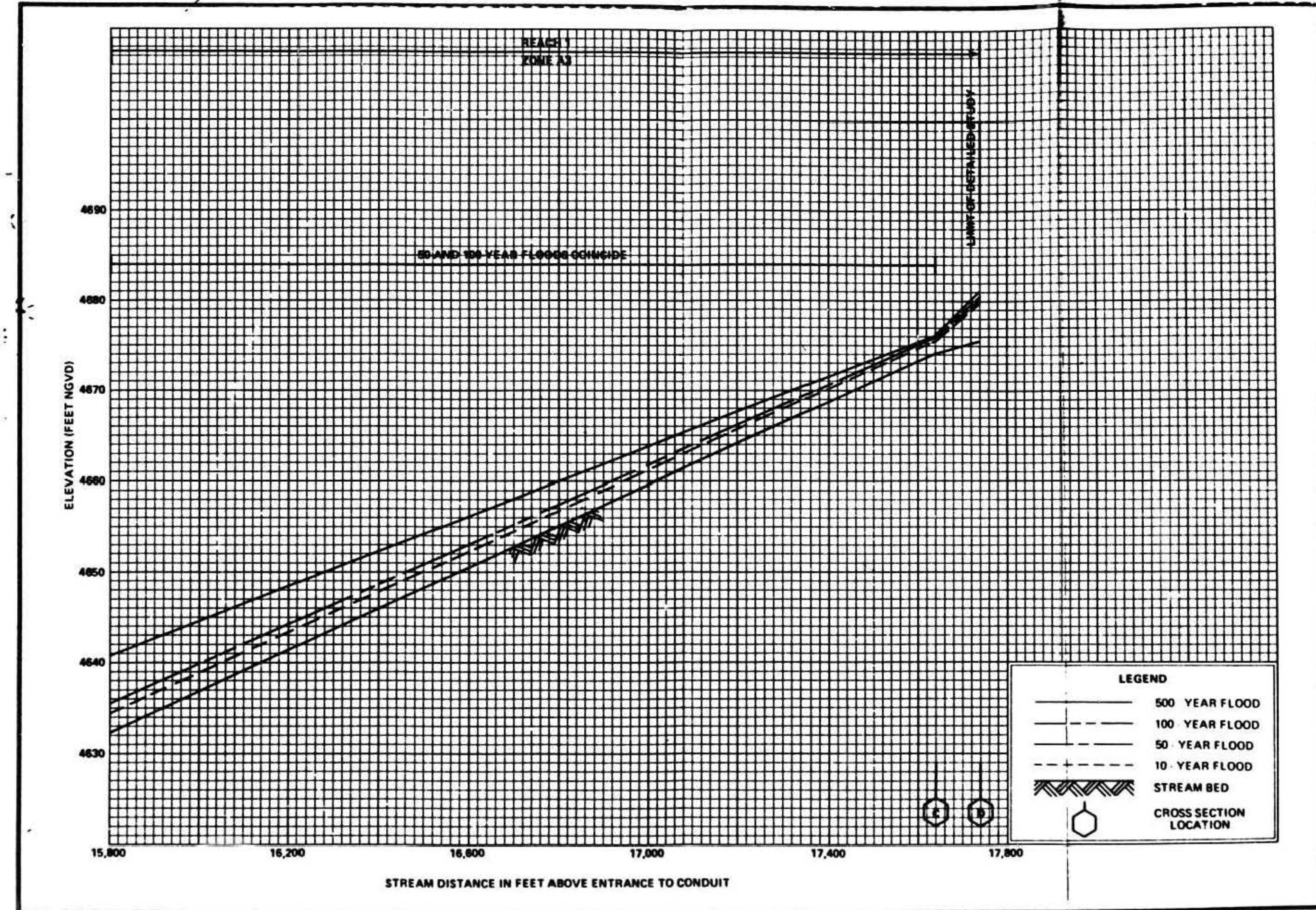
FLOOD PROFILES

PARLEYS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

31P



FLOOD PROFILES

PARLEYS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALT LAKE COUNTY, UT
(UNINCORPORATED AREAS)

32P

87